B.C. Hydro

LONG-TERM ECONOMIC OUTLOOK 1983 - 2002

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I. INTRODUCTION

The purpose of this report is to indicate the probable economic environment in which B. C. Hydro and its customers will be operating over the next 20 years, and to provide forecasts of those economic variables relevant to a wide range of corporate planning, operations and administrative functions. Economic forecasts are crucial inputs to B. C. Hydro's planning cycle. Consequently, the main emphasis of this report is on the forecasts of demographic, sectoral and macroeconomic growth trends which, combined with the forecasts of relative energy price trends, are the starting point for the electricity and gas load forecasting process. The updated load forecasts are in turn translated into revised system and financial plans. Accordingly, this report also includes forecasts of the general outlook for inflation, interest and exchange rates which are factored into the cost estimating, budgeting, financial planning and rate setting processes. These activities are all linked in the strategic planning process for which the range of forecasts with associated probabilities is particularly important.

Aside from the Long-Term Economic Outlook, which is revised annually, a variety of other economic forecasts are made periodically to provide more detailed information. For those who are mainly interested in current prospects for the next six quarters, our Monthly Economic Updates would be more helpful. Similarly, some of the detailed and Hydro-specific inflation indices required for cost estimation and budgeting will be the subject of separate reports.

Over the years, the planning, design, approval and construction lead times for some major potential projects have lengthened to the point that the forecasting and planning horizon has now been extended to 20 years. Needless to say, a lot can change in 20 years, particularly when the starting point is in a period of great economic uncertainty. The challenge is compounded when one considers the complexity of the various economies, and the factors that can affect them, including changes in government policies, international relations, Federal/Provincial relations, labour/management relations, societal values, investor confidence, consumption habits, life-styles, interest rates and prices, plus the uncertainties regarding harvests, resource discoveries and technological developments. While there is also the possibility of a number of potentially devastating events, such as war and major natural disasters, they have not been assumed in this report.

Given the particularly high level of uncertainty as to what our economic future will be over the next 20 years, this report presents the set of assumptions believed most likely, and estimates the economic consequences. This central forecast is bracketed by two more extreme but conceivable futures, within which there is an estimated 70% probability that actual long-term B. C. economic growth will fall. This wide range of possibilities was chosen in order to allow the kind of sensitivity studies, contingency planning and risk analysis that is prudent in the face of uncertainty.

There is, of course, no foolproof or "correct" way to forecast the economic future. Consequently, a variety of forecasting methods were employed in the preparation of this report. The aggregation or bottom-up, approach consisted of forecasting the growth in value added in production for each of the major sectors of the provincial economy and combining them to infer total provincial economic growth. Consulting studies were commissioned for the forest, mining and smelting and retail sectors to provide more dependable insights to their economic contribution and energy requirements.

Extensive use was made of econometric modelling in preparing the forecasts. The top-down modelling approach began by inputting, three widely divergent projections of world oil price trends to Chase Econometrics 20 year model of the U.S. economy. The resulting range of the major U.S. macroeconomic indicators, together with our assumptions on such factors as Canadian energy investment, oil production, government expenditures and exports of key commodities, were then used as inputs to drive our simulations of the Canadian economy, using Chase Econometrics 20 year model for the Canadian economy. To derive the corresponding forecasts for British Columbia, the first four years came from the Central Statistics Bureau's quarterly model, based on our forecast ranges for inflation, interest and exchange rates, and economic production indicators for Canada and our major trading partners. Forecasts of value added for the forestry, mining and smelting and retail sectors were also exogenized to obtain the high and low forecast ranges. The four year forecasts for B. C. were extended to 20 years by developing a small simultaneous econometric model to derive forecasts for the main B. C. variables by linking them, to key Canadian and U.S. variables for which forecasts had already been made.

The modelling approach was also used in the demographic projections. Population forecasts were obtained by inputting our assumptions on fertility, mortality and net migration into a cohort-survival model. By making assumptions about labour force participation rates and unemployment rate trends, projections of the employed labour force were obtained, which, when multiplied by assumed future productivity trends, provided an alternative estimate of future B. C. growth. In addition, B. C. housing starts were cross-checked by comparing with the number of households implied by anticipated trends in population, headship rates and persons per household.

Two other B. C. Hydro computer models were employed in the Outlook. An energy model, developed with the assistance of Confer Consultants, was used to derive B. C. oil and petroleum products and possible natural gas prices by relating them to our forecasts of the international price of oil, inflation and exchange rates. And B. C. Hydro's Corporate Model was used to approximate future average electricity revenue requirements/kW.h.

The results from each of these forecasting approaches were then reviewed, together with the forecasts and opinions of others, and were finally synthesized, using a large measure of judgement, into three distinct long-term economic forecast scenarios:

- Economic Decline - the low economic growth condition, with an estimated 85% probability that its long-term growth will be exceeded.

- Restrained Recovery - the central forecast, that we believe has an equal probability of being above or below the actual long-term economic growth trend in British Columbia.

- Approaching Potential Output - the high economic growth condition, with an estimated 85% probability that its long-term growth will not be achieved.

Considering the scope of the subject, the report is organized so that the reader can move progressively from the general to the specific. Those requiring just an overview need go no further than the Executive Summary, which starts with the assumptions underlying the three economic scenarios, and then reviews the forecast highlights with respect to economic growth and demographics, inflation, interest and exchange rates and energy price trends. Supporting Figures and Tables are usually located close to the first reference to them. Most of the Figures show the central forecast and a shaded area which indicates the 70% confidence range for that particular economic variable. The forecasts are usually compared with the actual record over the past decade to help place them in some historical perspective. The forecasts reflect anticipated business cycle movement up to 1987, but from there on the number in the tables represent expected long-term average trends around which there is likely to be considerable fluctuation.

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LOW ECONOMIC GROWTH SCENARIO
ECONOMIC DECLINE

* There is an estimated 85% probability that the 1.9% 20 year average annual real growth of the B. C. economy resulting from this scenario will be exceeded.

Assumptions:

- Weak recovery in 1983 with minor inventory buildup.
- In 1984 the U. S. yields to pressures to create immediate jobs, and protectionism is increased.
- Temporary increase in U. S. production to displace imports, with a corresponding increase in U. S. inflation.
- Affected major trading nations impose counter protectionist measures and world trade rapidly declines.
- Canada and B. C. experience further declines in economic growth in 1985 and 1986. Unemployment rises as production falls. Consumption declines, confidence and investment evaporates. Further reductions in inflation and interest rates but little private borrowing, widespread liquidation, housing starts plummet.
- Some individual and corporate defaults in debt repayment, some international defaults and write-offs. Widespread social unrest.
- In the latter 1980s, international economic summit meetings result in rapid removal of protectionist measures, but world trade is slow to rebuild. Increased government stimulative measures.
- Low world oil price inhibits development of Canadian sources.
- Unemployment falls very slowly. Confidence, consumption and investment are lower than normal.
- Productivity is low, Labour/Management and Federal/Provincial relations stormy.
- Little diversification of production and markets or increased value added, strong sensitivity to economic cycles.
- Following the recovery, in the 1990's, some substitution of capital/technology for labour keeps unemployment high.
- Low levels of exploration and resource discoveries in B. C.
- Natural gas prices remain low but unstable, natural gas exports to the U. S. are weak.
- Thermal and Metallurgical coal exports remain around 1983 levels.
- Low world demand severely curtails the future growth of forest and mining sector production.

CENTRAL SCENARIO
RESTRAINED RECOVERY

* There is an estimated 50% probability that the 3.8% 20 year average annual growth of the B. C. economy resulting from this scenario will be exceeded.

Assumptions:

- Slow but steady economic recovery, starting in 1983, and accelerating in 1984 and 1985.
- Monetary policy in the U. S. and Canada are relatively stable throughout the forecast horizon, and there are no major international debt crises during the forecast period.
- Business picks up more or less as usual, although high unemployment, excess capacity and controls in the near-term help to moderate wage demands and keep inflation down.
- Interest rates remain relatively stable but there is little investment in plant, machinery and equipment until 1984/85.
- Residential construction increases in the short-term due to pent-up demand, government incentives and stabilization of interest rates.
- High levels of government deficits are brought down gradually by a combination of increased revenues and reduced expenditures through restraint on public wages, social programs, and capital programs.
- Slowly declining government deficits should not crowd out other borrowers from money markets, although if private borrowers return to the market en mass in 1984 and 1985, conditions could be difficuilt during that period.
- Canadian interest rates are maintained marginally above U. S. rates to attract foreign investment and keep the dollar in the low 80's.
- No real price increases for world oil until 1988 after which a real growth of 1% per year is expected. This will lower the rate of investment in oil projects in Western Canada from previous expectations.
- Unemployment will decline gradually, but substitution of capital and high technology for labour will inhibit dramatic reductions in unemployment levels.
- Only modest progress will be made in structural changes to the economy. The economy will remain very vulnerable to economic cycles and heavily dependent on the U. S. Shifts towards economic diversification and increased value added will be gradual, and some Federal/Provincial, Labour/Management conflicts will continue.
- Natural gas exports to the United States from B. C. will increase modestly by 1990.
- Copper will lead the B. C. metal mining recovery, followed later by zinc and molybdenum. One new copper and two new aluminum smelters are expected by 2000.
- While coal production will expand, an excess of production capacity relative to demand will remain.
- Lumber production will experience a healthy recovery, restrained only by supply in the 1990's.
- Pulp and paper demand will become more robust later in the 1980's and an expansion of capacity is expected in the late 1980's and the 1990's.

HIGH ECONOMIC GROWTH SCENARIO
APPROACHING POTENTIAL OUTPUT

* There is an estimated 15% probability that the 5.0% 20 year average annual growth of the B. C. economy resulting from this scenario will be exceeded.

Assumptions:

- A strong rebound of world trade starting in 1983.
- Recovery of production, employment, consumption and investor confidence.
- Monetary policy eases to allow continued economic growth at the cost of some increase in inflation.
- Oil prices start low to aid the economic recovery, but in the long-term they rise at a real rate of 2% per year and stimulate development of Western Canadian and frontier sources of oil.
- The opportunity cost of capital is high and there is therefore a high margin of interest rates over inflation rates.
- The exchange rate will be more stable and is kept sufficiently low to stimulate exports and discourage imports by reducing the margin between Canadian and U. S. interest rates.
- Strong investment in high technology and Information Age industries.
- Technology permits strong growth in productivity and diversification, but the substitution of capital for labour prevents a major sustained reduction in unemployment.
- More diversification of export markets, more value added to products and less sensitivity to economic cycles.
- High level of health and education.
- High immigration and population growth.
- More incomes partially linked to productivity and profitability. This and other innovations, lead to labour/management accord.
- Federal/Provincial and international cooperation.
- Strong natural gas exploration and discoveries in B. C. Increased exports to the U. S. and Japan, including the construction of an LNG plant and gas-based fertilizer plant in the mid 1990's.
- Metallurgical coal exports will fully utilize currently planned capacity. Opportunities for thermal coal exports to Pacific Rim markets will result in expansion of thermal coal production.
- Lumber production will be constrained only by supply. More whole tree utilization and more value added to exports.
- Pulp and paper production will expand, particularly in the energy-intensive TMP and CTMP processes which have better fibre utilization. B. C.'s historic market share in Asia will be recovered and surpassed.
- Strong demand growth will stimulate the recovery of metal mining and 3 new aluminum and 2 new copper smelters will be developed by the year 2000.
- Vancouver will strengthen its position as the financial centre of the Pacific-Northwest.
- Tourism will experience strong growth.

Table 1
KEY ECONOMIC INDICATORS

Economy	Economic Indicator	History		Forecast					
		61 to 81	82	83	84	85	86	87	87 to 2002
United States	Economic Growth Real GNP (% Change)	3.5	-1.7	2.8	4.9	4.4	3.0	1.5	2.9
	Inflation CPI (% Change)	5.7	6.2	3.5	4.8	5.5	5.2	4.5	5.0
	Interest Rate 91-Day Treasury Bills	6.0	10.9	7.5	7.7	8.0	7.5	7.5	8.0
	Housing Starts[1]/Year (Millions)	1.56	1.1	1.6	1.8	2.0	2.1	1.8	1.73
Canada	Economic Growth Real GNP (% Change)	4.6	-4.8	2.4	5.3	4.3	3.5	2.0	3.1
	Inflation CPI (% Change)	5.9	10.8	6.4	5.5	6.0	6.0	5.0	5.5
	Interest Rate 90 Day Finance Company Paper	7.6	14.2	9.0	9.5	10.0	10.0	9.0	8.5
	Foreign Exchange U.S. ¢/Can. $	93.8	81.1	81.5	82.0	82.5	83.0	83.5	84.0
British Columbia	Economic Growth Real GDP (% Change)	5.4	-7.0[2]	1.8	5.8	6.0	4.5	2.0	3.7
	Population (Thousands)	1,629[3]	2,783	2,817	2,865	2,920	2,979	3,040	4,111[4]
	Unemployment Rate (%)	7.6[5]	12.1	13.5	12.5	11.5	11.0	10.5	8.0
	Inflation CPI (% Change)	5.7	10.5	6.2	6.0	6.5	6.5	5.5	6.0
	Housing Starts[1]/Year (Thousands)	28.1	19.8	26	33	35	31	26	35
	Forest Sector[6](% Change)	3.4	-16.0	8.0	22.0	16.0	10.0	-8.0	1.5
	Minerals Sector[7] (% Change)	7.7	-18.0	5.0	26.0	14.0	-5.0	2.0	5.8

1 Excludes mobile homes.
2 Estimated.
3 Value for the first year of the period shown.
4 Value for the last year of the period shown.
5 Historic average from 1971 to 1981 only.
6 Growth in real value of production in logging, wood products and pulp and paper products.
7 Growth in the real value of production in metal mining, smelting, metal manufacturing, non-metallic minerals, coal, oil and gas products.

II. EXECUTIVE SUMMARY

Economic Growth and Demographics in B. C.

- The 1982 economic recession was the deepest since the Depression. There is considerable uncertainty regarding future provincial economic growth, as shown by the wide range of possible futures in the three alternative scenarios outlined at the start of this chapter. The slow economic recovery has already started and B. C. is expected to recover faster than any other province. Our central forecasts, summarized in Table 1, show that the B. C. economy is expected to continue to grow faster on average than both the U.S. and Canadian economies, although future B. C. economic growth will average significantly lower than the historical trend. By 1990, B. C. real GDP should have recovered to the level forecast in the 1982 Long-Term Economic Outlook.

- Forestry exports, and to a lesser extent mining, will lead B. C. out of the recession. However, due to a slow world economic recovery especially in the U.S. and Canada, B. C. real economic growth in 1983 is only expected to grow 1.8%. Beyond 1983, continuing growth in these sectors spurred by the world economic recovery, combined with increased activity in other sectors, especially services, will contribute to a robust average real GDP growth of over 5.0% to 1986. In the long-run, the anticipated strength in mining, services and secondary manufacturing, plus healthy population growth and relatively stable prices and interest rates, should combine to allow Provincial real GDP growth to average 3.7% per year to the year 2002.

- The projected increase in housing starts in the U.S. bodes well for the forest sector, but raw material limitations around 1995, will constrain long-run growth. This will provide a strong incentive for innovations, such as more fibre-efficient energy intensive pulping techniques, higher value added products, and better tree utilization.

- Sawmill capacity will increase in all regions. Overall, these increases represent a small portion of current levels and should come from the modernization of existing facilities rather than the establishment of large new greenfield sawmills.

- By 1993 the Pulp and Paper industry will have invested in four new greenfield market pulp mills. These mills will be located in the Central Interior region and will be using chemi-thermomechanical pulp (CTMP) or thermomechanical pulp (TMP) technology. In addition, the Vancouver Island region (Port Alice) is projected to have one bleached sulfite pulp mill converted to bleached CTMP. The majority of the increased production after 1993 is estimated to be from the installation of existing integrated mills of new paperboard machines and new production lines. Up to three new greenfield market pulp mills using CTMP/TMP could also be built in the Central Interior.

- In mining, the projections reflect an assumed increase of metallurgical coal production in both the Northeast and Southeast. After 1990, thermal coal exports are also expected to improve significantly. However, more competitive crude oil prices, a reduced outlook for Japanese steel production, and the highly competitive Australian, South African and Colombian producers will provide strong competition to B. C. mines, and are likely to result in an excess of coal supply relative to world market demand. Consequently, provincial coal production capacity may not be fully utilized.

- Copper pricing and production will dominate metal mining activity. The largest metal mining investment is likely to be the expansion of Bethlehem/Valley Copper after 1991.

- The forecast assumes that by 1995 a second lead/zinc smelter will be built. Sufficient concentrates exist to support a world scale copper smelter and the forecast assumes that a new copper smelter will be built in the 1990 to 1995 period. Also two new aluminum smelters are included, each with a capacity of 175,000 tonnes per year; the first in 1990 and the second in 1995. In addition, a fourth aluminum smelter is shown as starting tentatively in 2002.

- The growth rate of tourism and retail trade should improve as consumers, regain confidence. Important government projects such as B. C. Place, Canada Place, and especially Expo 86 will be major factors in the increasing importance of tourism in B. C.

- B. C.'s population is estimated to reach 3 million by 1987 and 4.1 million by 2002. This represents a long-term growth rate of almost 2% per year, compared with an average of 2.6% per year over the past 20 years. The continuation of strong population growth is a significant factor underlying continued provincial economic growth, especially in the service sector. As in the past, B. C.'s population growth will continue to be highly influenced by net-migration.

- The recent recession caused a dramatic hike in B. C.'s unemployment rate to 12.1% in 1982, higher than the 11.1% rate for Canada as a whole. B. C.'s unemployment rate is expected to deteriorate further this year to average 13.5% and is likely to remain a serious problem to the economy into the long-term. The 9.0% average rate projected for 1988 to 1992 and 7.5% thereafter reflects the fact that economic growth is not expected to generate sufficient employment opportunities relative to labour force growth.

- Residential construction activity in B. C. will experience slow improvement during the recovery, and housing starts are expected to average about 26,000 in 1983. The average number of persons per household is expected to slowly decline between now and the year 2002. Consequently, housing starts are projected to average 33,000 units per year in the medium-term, rising to 36,000 starts annually thereafter.

- The B. C. economy faces a number of challenging structural problems, including high unemployment rates, major government deficits, cyclical instability and heavy dependence on the U.S. economy. In addition, the forecasts of real B. C. GDP have more downside than upside risk. In otherwords, factors such as widespread international protectionism and debt defaults could reduce economic growth prospects more than the positive factors in the high growth scenario could stimulate growth.

Interest, Inflation and Exchange Rates

- The severity of the recession, tight monetary policy, restraint programs, and the softening of world oil prices are the main contributors to lower inflation. British Columbia inflation as measured by the Vancouver Consumer Price Index (CPI) is expected to follow the Canadian trend but should remain approximately 0.5% above the national average. B. C. inflation is projected to average 6.2% in 1983 and stay relatively stable thereafter, fluctuating between 5.5 to 6.5%.

- Central bankers in the U.S. and Canada implemented more accommodative monetary policies in response to the recent recession and the drop in inflation, which allowed interest rates to edge downward in 1982. It is projected that U.S. 91-Day Treasury Bills will bottom out in 1983 at 7.5% and stabilize at an 8.0% average rate in the long-term in response to declining U.S. budgetary deficits, improved inflationary expectations and less volatile monetary policy. Long-term bond rates will remain higher on average than short rates but will follow a similar long-term trend.

- It is expected that in Canada short and long-term interest rates will generally mirror the trend in U.S. rates, although Canadian rates are anticipated to maintain a smaller margin over U.S. rates than in the past. As weak demand for new short-term credit exerts downward pressure on interest rates, 90 Day Commercial Paper rates should drop to 9.0% in 1983, peak at 10% in 1985 and 1986 during the next economic cycle, and average 8.5% per year in the long-run as inflationary expectations moderate. B. C. Hydro Composite Bond rates, as shown in Table 2, are expected to bottom out during fiscal year 1984 to average 11.8%. As inflation rises slightly during the peak of the economic cycle, B. C. Hydro's Composite Bond rates are expected to average 12.2% in fiscal 1985 and gradually decline to 10.5% by 1988. In the long-term, reduced inflationary expectations and relatively stable monetary policy will be the main factors to stabilize B. C. Hydro Composite Bonds around the 10.3% level.

Table 2

B. C. HYDRO COMPOSITE BOND RATES[1]

Fiscal Year ending 31 March	Average Annual Rate %		
1971	7.62[1]		
1972	7.09		
1973	7.48		
1974	8.00		
1975	9.71		
1976	10.02		
1977	9.40		
1978	9.05		
1979	9.94		
1980	11.69		
1981	12.82		
1982	15.47		
1983	13.83		
	Low[2]	Central[2]	High[2]
1984	7.0	11.8	15.0
1985	7.5	12.2	16.0
1986	7.5	12.1	17.0
1987	5.5	11.2	16.0
1988	6.5	10.5	14.5
1988-2003	6.5	10.3	14.0

[1] Historical data are the average effective annual interest cost of long-term debt during the fiscal year.

[2] Estimated by assuming 40% of Hydro bonds issued in Canada and 60% issued in the United States, half at the 10 year bond rate and half at the corresponding 30 year bond rate. No allowance has been made for changes in the exchange rate during the borrowing period.

- Canada's improving relative inflation performance, positive interest rate differentials, and capital inflows are likely to result in a very gradual increase in the value of the Canadian dollar to an average exchange rate of 85¢ U.S. by 2002.

- Depending on the direction of U.S. Federal Reserve policy plus other national and international economic/political events, the projections of interest and exchange rates could be significantly different than in the central case. For example, an even tighter U.S. monetary policy could be caused by unusually large government deficits in both Canada and the U.S. which would put an upward pressure on long-term interest rates as soon as the recovery gets underway. Alternatively, an abrupt shift to a more expansive monetary policy in the U.S. could cause a sharp decline in domestic interest rates.

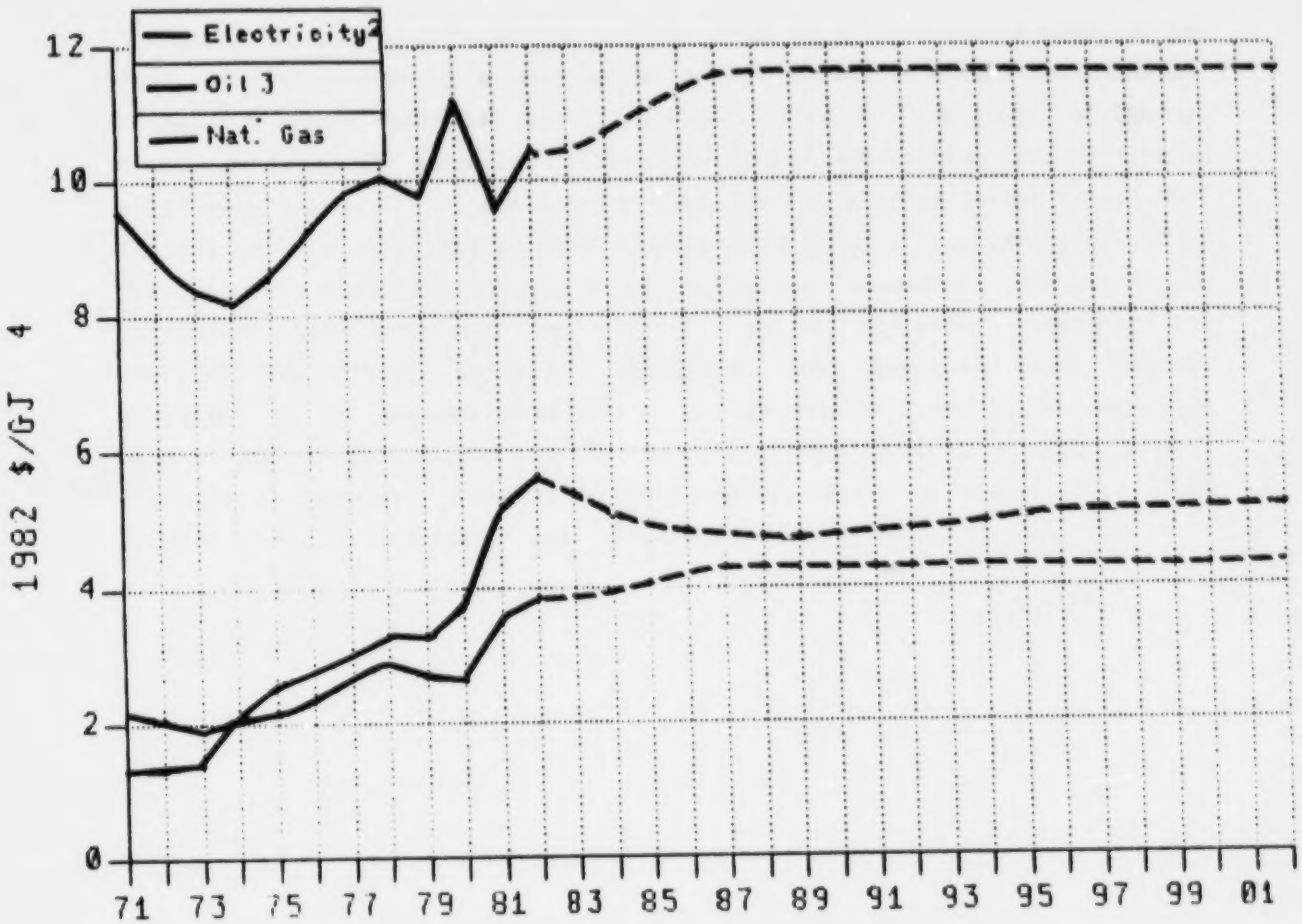
Energy Prices

- The central forecast assumes a further softening of world oil prices to 1984, after which prices are expected to keep pace with inflation until 1987 and to grow at 1% above U.S. inflation in the long-term. A number of assumptions were made to derive the Vancouver blended crude oil price to refiners, from which the average price to consumers of the resulting petroleum products were inferred. Figure 1 shows that over the next five years a real decline is expected in the Vancouver blended crude oil price, which will also apply to most of the petroleum product prices over the next 5 years. In the long-term relatively modest real price increases are expected.

- Based on an examination of a range of load forecasts and corresponding generation plans, electricity prices are forecast to increase 3% per year in real terms between 1983 and 1988 and to keep pace with inflation for the balance of the forecast period.

Figure 1[1]

B.C. RELATIVE ENERGY PRICE TRENDS



Footnotes:

1. Prices quoted have not been corrected for end-use efficiencies.
2. Prices shown are average selling prices for gas and electricity and do not represent the prices energy consumers will pay. Cost of refining, distribution or sales taxes are not included in oil price.
3. Crude oil average price for Canada 1971-81: blended Vancouver crude price 1983-2002.
4. Conversion Factors: Electricity 277.8 kWh = 1 GJ
   Oil 0.1634 bbl = 1 GJ
   Natural Gas 26.7 m3 = 1 GJ

- Currently, B. C. Hydro's average selling price of natural gas is based on the B. C. Utilities pricing method which is not directly linked to crude oil prices. A recent technical report released by the B. C. Ministry of Energy, Mines, and Petroleum Resources (MEMPR) provides an alternative pricing formula which sets the B. C. wholesale price equal to the Alberta Border Price (ABP) in 1986 and increases the wholesale price to achieve a heat parity of 65% of the Vancouver blended crude oil price in 1990 and thereafter. The provincial government has not made an official policy statement regarding the Vancouver 65% pricing method. Therefore, for long-term load forecast purposes, it is assumed that the B. C. government's policy to encourage natural gas use will remain and that Hydro's average price of natural gas will increase at the same rate as Hydro's average price of electricity. This results in a 12% increase in real terms during the forecast period.

Table 3

UNITED STATES ECONOMY

CENTRAL FORECAST SUMMARY

Indicator	Actual	Forecast						
	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GNP (Billions of 1972 $)	1,476	1,517	1,591	1,661	1,711	1,737	2,014[1]	2,654[1]
REAL GNP (% Change)	-1.7	2.8	4.9	4.4	3.0	1.5	3.0	2.8
CPI (% Change)	6.2	3.5	4.8	5.5	5.2	4.5	5.0	5.0
HOUSING STARTS[2] (Millions)	1.1	1.6	1.8	2.0	2.1	1.8	1.8	1.7
TREASURY BILLS (91 Day)	10.9	7.5	7.7	8.0	7.5	7.5	8.0	8.0
10 Year AAA Canadian Provincial Bonds	14.0	11.0	11.5	11.5	10.5	10.0	9.5	9.5
30 Year AAA Canadian Provincial Bonds	15.0	12.0	12.3	12.0	11.0	10.5	10.0	10.0

[1] Value for the last year of the period shown.
[2] Excluding mobile homes.

III. U.S. AND MAJOR ECONOMIES

1. UNITED STATES

1.1 Economic Growth

The recent history of U.S. real economic growth is shown in Figure 2. In 1981 the economy appeared to be in the early stages of a normal business cycle recovery, but with inflation in the double digits, the Reagan Administration tightened the growth of the money supply, pushing up interest rates to a record high and sending the economy into the worst recession since the Great Depression.

The outlook for the short-run is for gradual recovery in 1983, primarily caused by increased spending in housing and consumer durables. These factors will in part be offset by a deterioration in net exports, due to a stronger U.S. dollar, and real GNP growth in 1983 is therefore projected at 2.8%. Business investment is expected to recover after 1984, reflecting an increase in cash flow, corporate profits, higher utilization rates and consumption expenditures. Improvement in the trade balance, plus a strengthening of capital spending will contribute to real economic growth reaching 4.9% by 1984. In the longer term, U.S. real economic growth should average about 2.9%, compared with the 3.5% per year average economic growth experienced over the past twenty years.

1.2 Inflation

The Reagan Administration has succeeded in bringing down inflation at the cost of high unemployment. Figure 3 shows that after peaking at 13.4% in 1980, the U.S. CPI has steadily declined and is expected to bottom out around 3.5% in 1983. This dramatic price moderation was primarily due to the combined effect of the severity and duration of the recession, tight monetary policy, the decline in energy prices and moderating prices in other sectors. As the economy recovers, some rebound in inflation is likely, but the CPI is not expected to rise above 5.5% because of the moderating influence of existing excess capacity, softening oil prices, moderating

Figure 2
U.S. ECONOMIC GROWTH RATES
REAL GNP

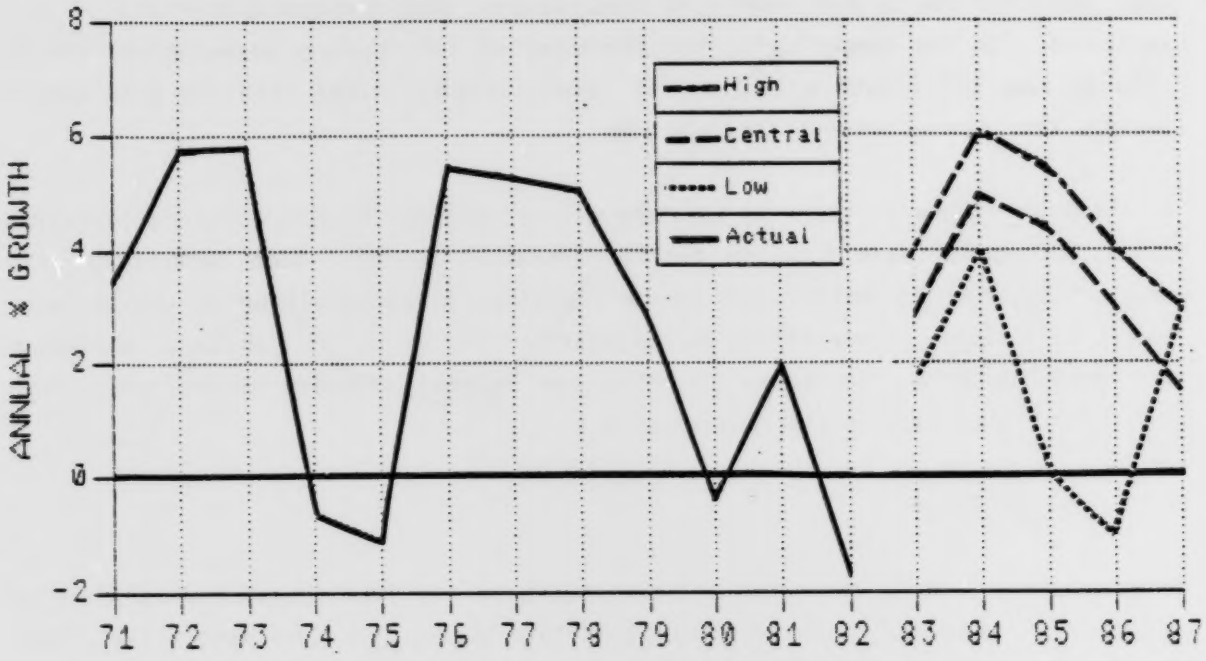
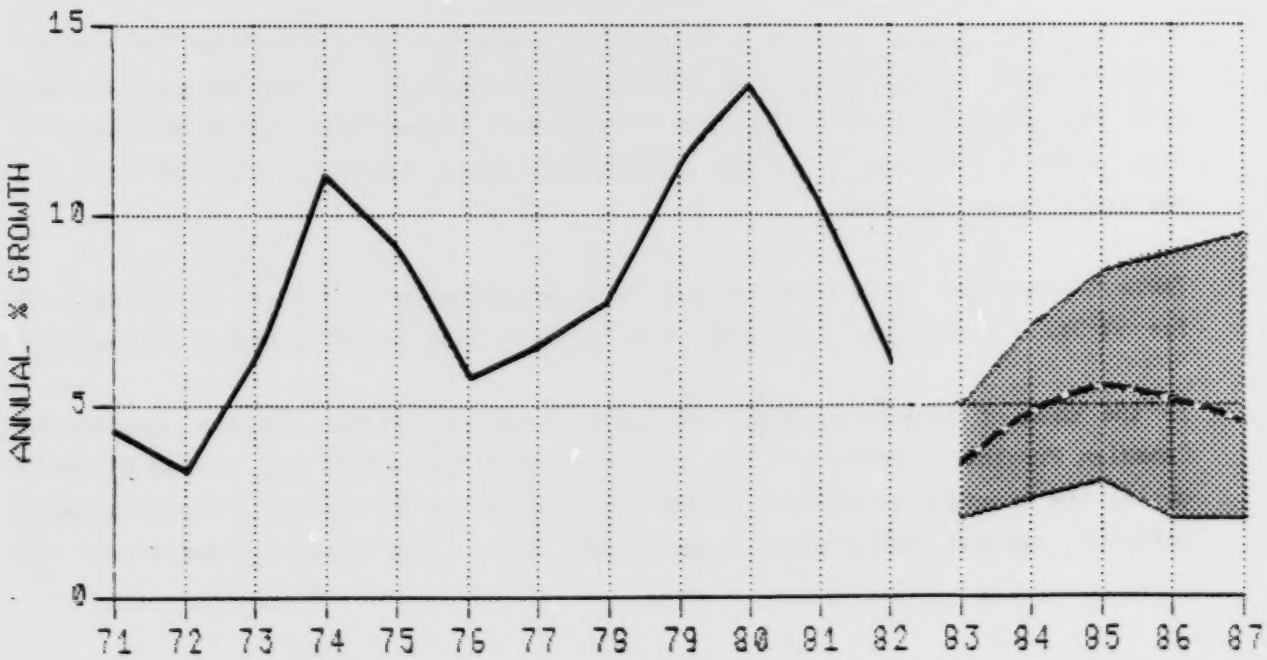


Figure 3
INFLATION - U.S.
CONSUMER PRICE INDEX



wage pressures due to more realistic expectations, plus continuing monetary restraint. In the longer term, the dampening of inflationary expectations should help to keep CPI growth around the 5% level, slightly lower than the 5.7% annual average experienced between 1961 and 1981.

As shown in Figure 3, there is considerable uncertainty regarding future inflation since it depends very much on future government policy. Such factors as more restrictive monetary policy and further declines in world oil prices could cause lower inflation. Conversely, an escalation in world oil prices, worsening government deficits, increased spending and relaxed monetary policy could push inflation higher than in the central case.

1.3 Interest Rates

Interest rates soared following the commitment in mid 1980 by the Federal Reserve and the U.S. Administration to reduce inflation through monetary restriction. But in the summer of 1982, as the resulting recession deepened and inflation began to fall, the Fed slowly allowed the growth in the money supply to increase and consequently, 91-Day Treasury Bills dropped from 14% in 1981 to 10.8% in 1982. This is illustrated in Figure 4.

Real interest rates, which are obtained by removing inflation from the nominal interest rates, have undergone a dramatic shift recently. Since the peak in 1981 real short-term interest rates have dropped much faster than real bond rates. A more normal yield curve slope has been reestablished, although real bond rates are now extraordinarily high.

Table 4 shows that short-term interest rates are expected to bottom out around 7.5% for 91-Day Treasury Bills in 1983, and to trend only slightly higher thereafter.

In the case of long-term bonds, the expectation is for the interest rate on AAA Canadian Provincial Bonds to range between 11 and 12% in 1983 and to rise slightly during the economic recovery. In the longer term, gradually declining government deficits, reduced inflationary expectations, and a less volatile monetary policy

Figure 4
INTEREST RATES-U.S.
91 DAY TREASURY BILLS

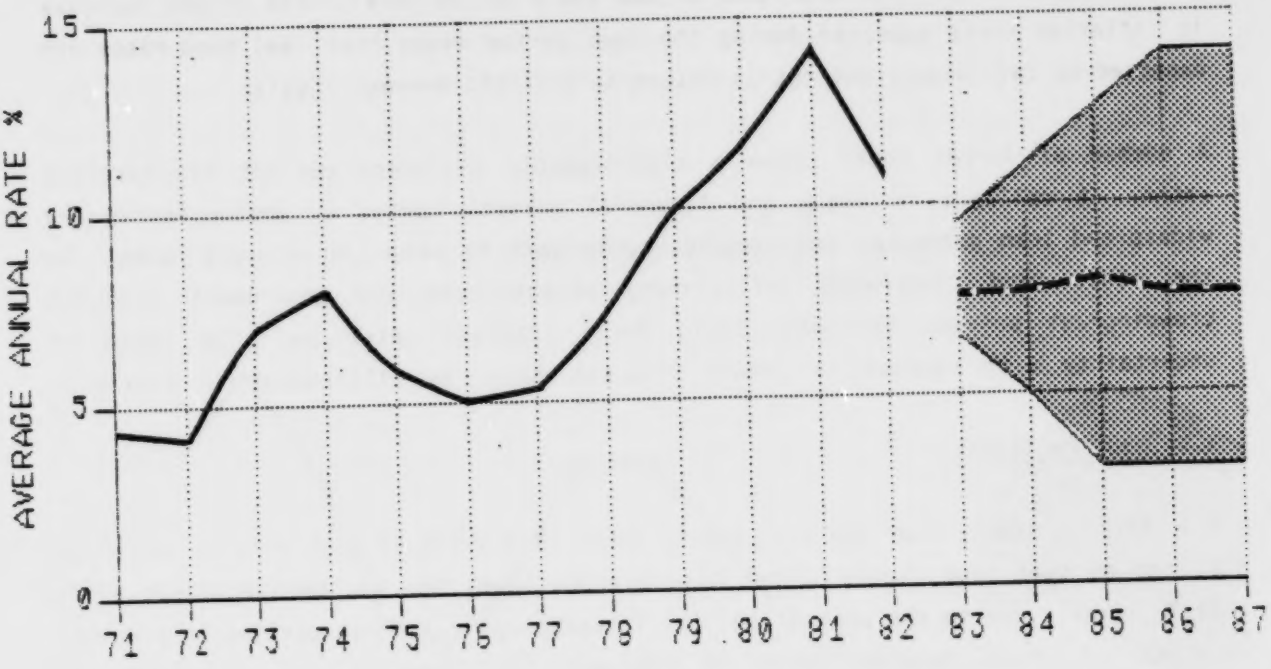


Table 4

U.S. INFLATION AND INTEREST RATES

Annual Averages

Year	Inflation CPI % Change	Interest Rates %		
		91-Day Treasury Bills	10 year AAA Canadian Provincal Bonds	30 year AAA Canadian Provincial Bonds
1971-76	7.1	5.7	N/A	N/A
1976-81	9.8	8.9	N/A	N/A
1981	10.2	14.1	N/A	N/A
1982	6.2	10.9	14.0	15.0
1983	3.5	7.5	11.0	12.0
1984	4.8	7.7	11.5	12.5
1985	5.5	8.0	11.5	12.0
1986	5.2	7.5	10.5	11.0
1987	4.5	7.5	10.0	10.5
1987-92	5.0	8.0	9.5	10.0
1992-2002	5.0	8.0	9.5	10.0

should help to stabilize bond rates around the 9 to 10% level. The slight increase in inflation rates expected during the same period means that real bond rates are expected to fall slowly but not to return to historic average levels.

A number of forces could cause a significantly different outlook for interest rates. A collapse in trade and financial markets caused by protectionism and widespread loan defaults, for example, could lead to very low interest rates. On the other hand, increased inflationary expectations and government deficits crowding-out private borrowers could force interest rates up. The range of uncertainty with respect to future interest rates is illustrated in Figure 4.

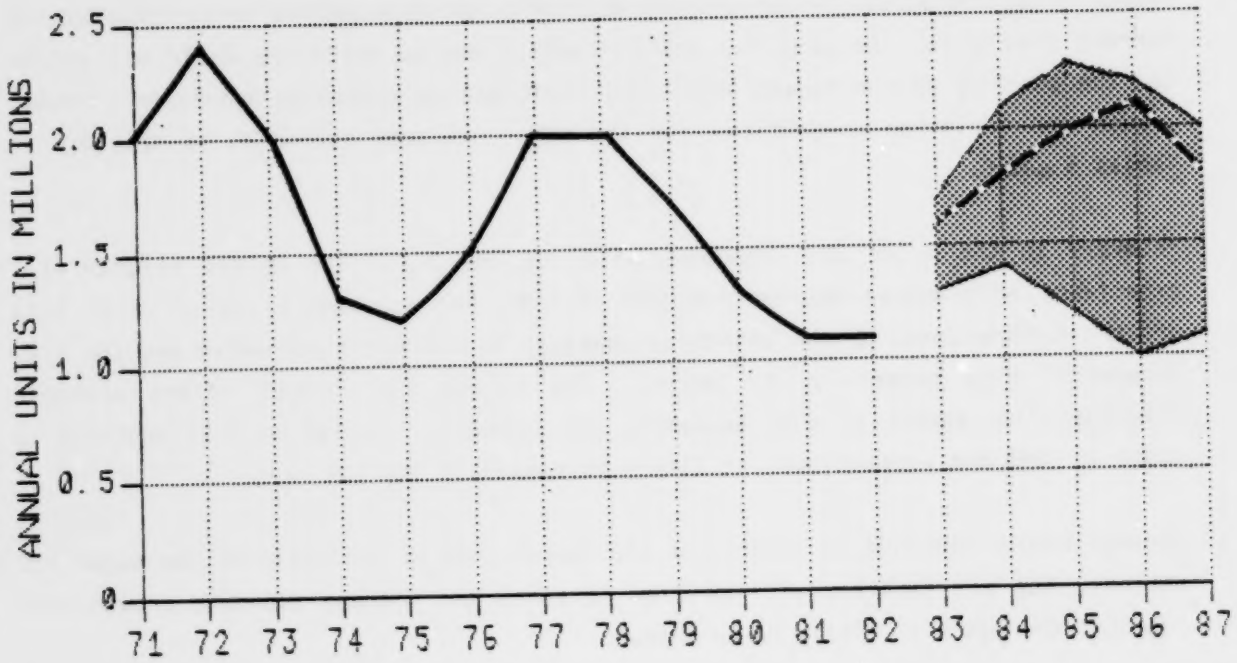
1.4 Housing Starts

U.S. housing starts over the last twenty years have averaged 1.56 million annually. It can be seen from Figure 5 that this average level has not been attained since 1979, largely due to the prevailing high interest rates and the decline in personal income. In fact, housing starts in 1982 were less than 1.1 million starts, the lowest level since 1946.

Real disposable income in 1982 increased by approximately 1.2% due to the decline in inflation and personal tax cuts, but consumers chose to increase their rate of savings and pay off some of their debt rather than increase their spending. The pent-up demand for housing that currently exists, coupled with the projected decline in interest rates and further personal tax reductions, should create the environment required to encourage more housing starts and purchases. The short-term outlook calls for a steady improvement in housing starts from 1.6 million forecast for 1983 to a peak of 2.1 million in 1986.

In the longer term, continuing demand, stable interest rates and prices should combine to maintain an average of 1.7 million starts, which should benefit the B. C. forest sector. U.S. housing starts could be substantially higher than in the central case due to such factors as low interest rates and very robust economic growth, for example. Conversely, poor economic performance as well as high interest rates would lead to lower U.S. housing starts.

Figure 5
HOUSING STARTS - U.S.



2. OTHER MAJOR ECONOMIES

The recovery in the European Economic Community (EEC) has been further postponed by the delay in a sustained U.S. recovery. The near-term economic performance of the EEC is expected to be weak, with close to 2.7% average annual growth to 1985. Slow growth, rapid import penetration, and resultant job losses in some sectors have caused a movement towards protectionism. Unemployment rates in the EEC, which are currently at record levels, will edge downwards very slowly. However, the recent reduction in inflation is encouraging and inflation is expected to continue around current levels for the next few years, largely due to softening world oil prices and the severity of the recession itself. Information regarding near-term economic growth and inflation projections for the major overseas economies is provided in Tables 5 and 6.

Recovery in the major EEC economies will lag the U.S. The United Kingdom will experience only modest economic growth in 1983 and subsequent years. Even this growth is threatened by the potential weakness in the world economies and the U.K. consumers' high propensity to import. The recent U.K. budget offers economic stimulus with respect to both consumers and industry. Inflation will continue to abate to 1985 but unemployment is likely to remain in the 12% range.

Germany should continue to experience the lowest rate of inflation of the major EEC nations, but the recovery will be slow to start and average economic growth over the next few years is likely to be modest.

Italy's economic performance is forecast to improve to 1985 as the result of the recent decline in world oil prices and recovery of its trading partners. Inflation is expected to remain significantly higher than in the other major EEC nations and unemployment will not decline soon.

In the next few years, much of France's economic policy will focus on measures to solve the external balance of trade problem and restore stability to the Franc. Modest growth is expected in 1983, with improvement thereafter. Inflation is not expected to worsen and unemployment will range from 8 to 9%.

As a result of the prospective recoveries of its major trading partners, Japan will continue to be the fastest growing major industrialized country, with real growth between 3 to 4% to 1985, albeit lower than the 4.7% averaged in the 1970's. On the inflationary front, Japan is expected to experience only modest increases from recent low levels.

The longer term implications for Canada of these international outlooks is positive, provided that the recoveries in these economies are not delayed further and, most importantly, provided protectionist measures are not pursued.

Table 5

OVERSEAS ECONOMIES

REAL ECONOMIC GROWTH[1]

Countries	Average Annual % Change				
	Actuals		Forecasts		
	1971-81	1982	1983	1984	1985
West Germany	2.6	-0.6	1.0	3.1	1.9
United Kingdom	1.5	0.9	2.6	2.3	2.4
France	3.3	1.1	1.9	3.9	3.1
Italy	2.9	0.8	1.5	3.1	3.1
Japan	4.7	2.6	4.1	4.2	2.9

[1] As measured by real Gross Domestic Product growth.

Source: Historical data from OECD: forecasts from Wharton Econometric Forecasting Associates, March 1983.

Table 6

OVERSEAS ECONOMIES

INFLATION[1]

Countries	Actuals		Forecasts		
	1971-81	1982	1983	1984	1985
West Germany	5.1%	4.2%	2.8%	3.0%	3.2%
United Kingdom	13.8	8.2	5.4	4.7	6.4
France	9.6	12.1	7.7	7.5	7.3
Italy	15.1	16.8	13.9	12.2	12.0
Japan	6.9	2.5	-0.3	1.0	1.6

[1] As measured by the Gross Domestic Product Deflator.

Source: Historical data from OECD: forecasts from Wharton Econometric Forecasting Associates, March 1982.

Table 7

CANADIAN ECONOMY

CENTRAL FORECAST SUMMARY

Indicator	Actual	Forecast						
	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GNP (Billions of 1971 $)	128.1	131.2	138.1	144.1	149.1	152.1	178.0[1]	239.2[1]
REAL GNP (% Change)	-4.8	2.4	5.3	4.3	3.5	2.0	3.2	3.0
GNP Deflator (% Change)	10.7	6.5	5.5	6.2	6.5	5.5	6.0	6.0
CPI (% Change)	10.8	6.4	5.5	6.0	6.0	5.0	5.5	5.5
UNEMPLOYMENT RATE (%)	11.1	12.5	12.0	11.0	10.5	10.0	8.0	8.0
HOUSING STARTS[2] (Thousands)	126	160	190	205	190	175	180	180
FINANCE COMPANY PAPER (90 Day)	14.2	9.0	9.5	10.0	10.0	9.0	8.5	8.5
MYW-AAA-10 Provincial Bonds	15.4	12.0	12.5	13.0	12.5	11.0	11.0	11.0
EXCHANGE RATE (US¢/Can$)	81.1	81.5	82.0	82.5	83.0	83.5	84.0	84.0

1 Value for the last year of the period shown.
2 Excluding mobile homes.

IV. CANADIAN ECONOMY

1. ECONOMIC GROWTH

Economic growth in Canada is largely affected by economic developments occurring south of the border. Not only is the U.S. our major trading partner, but over 70% of all capital investment in the country comes either directly or indirectly from the United States, thus making our economy extremely sensitive to any economic events in the U.S.

Canadian real economic growth tends to be higher than that in the U.S. during both the peaks and troughs of a normal business cycle. In fact, from 1948 to 1981 the Canadian economy only shrank once, whereas the U.S. experienced several negative growth years. However, as shown in Figure 6 and Table 8, the situation in 1982 was reversed as Canada suffered the worse economic contraction since the Depression with a -4.8% decline in real GNP, mostly attributable to the high interest rates which led to a general collapse of world trade, crippled investment, and constrained consumption.

The economic recovery is expected to start in 1983 with a modest 2.4% gain in real GNP resulting largely from inventory buildup and exports. Real business investment will decline approximately 12% and total consumption expenditures are expected to grow by a mere 2.0% or less reflecting a continued lack of consumer confidence. After a weak recovery in 1983, total investment is expected to increase, world trade and consumer expenditures are forecast to improve, and Canadian real economic growth should climb to 5.3% real GNP growth in 1984, the peak of the next business cycle. In 1985 however, a less robust growth of 4.3% is anticipated, due to moderating international trade and slightly higher interest and inflation rates. At the bottom of the next economic cycle in 1987, the Canadian economy is expected to show a 2.0% growth in real GNP.

Real personal disposable income growth should average a modest 2.0 to 3.0% per year to the end of the century compared with the 5.1% average annual growth experienced between 1971 and 1981. Total consumption growth will be lower than the 4.0 to 5.0% real historical average due to high unemployment, high real interest rates and low

Figure 6
CANADIAN ECONOMIC GROWTH RATES
REAL GNP

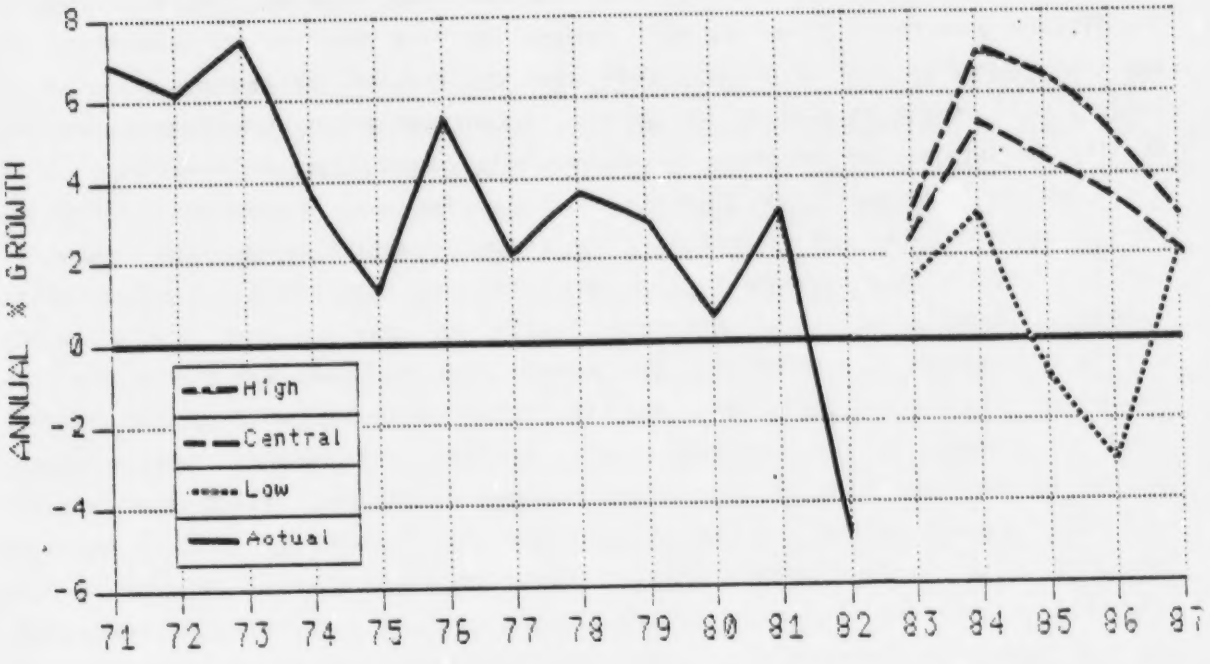


Table 8

CANADIAN ECONOMIC GROWTH

Year	Nominal GNP		Real GNP	
	Billions of Current Dollars	Annual Growth Percent Change	Billions of 1971 Dollars	Annual Growth Percent Change
1971-76	94.5[1]	15.1	94.5[1]	4.8
1976-81	191.0[1]	11.6	119.2[1]	2.4
1981	331.3	13.5	134.5	3.1
1982	348.9	5.3	128.1	-4.8
1983	381	9.2	131	2.4
1984	423	11.1	138	5.3
1985	469	10.8	144	4.3
1986	517	10.2	149	3.5
1987	556	7.6	152	2.0
1987-92	871[2]	9.4	178[2]	3.2
1992-2002	2,095[2]	9.2	239[2]	3.0

[1] Value for the first year of the period shown.
[2] Value for the last year of the period shown.

productivity gains. These factors, plus the fact that high deficits will prevent significant government stimulus, will inhibit GNP from reaching its potential. In addition, Canadian real economic growth over the rest of the century as shown in Table 7 will depend in part on the growth in Canadian productive capacity and our ability to survive and progress in increasingly competitive world markets. This will require investment in fast-growth industries and productivity increases through modernization and automation. The central forecast assumes one or two oil and gas industry megaprojects in the late 1990's as real world oil prices trend upwards. Canada's political environment will, of course, also have a strong bearing on economic developments. The degree to which Canada can bridge the wide gap between its current performance and its economic potential will depend upon the level of cooperation between governments, business and labour. This economic outlook assumes that many of the current regional disparities will narrow somewhat over the forecast period and that a long-term improvement in relations is more likely than a further deterioration. Canadian real economic growth in the long-term is expected to average slightly above 3.0% per year, which is lower than the 4.6% historical Canadian average but higher than the 2.9% average annual growth projected for the U.S. over the long-term.

2. INFLATION

As shown in Figure 7, inflation, as measured by the Consumer Price Index (CPI), reached double digits in 1974 and 1975, and temporarily subsided to the 7.5% level in 1976 before resuming its upward climb to a peak of 12.5% in 1981. This peak was largely the result of loose monetary policy and higher energy prices. In recent years, considerable emphasis has been placed on monetary and fiscal restraint, which succeeded in reducing inflation in Canada to 10.8% in 1982.

There are grounds for optimism that inflation will continue to abate given lower U.S. inflation, lower interest rates, high unemployment rates, the easing of world oil prices, and public sector restraint programs. Therefore, the outlook is for a much improved inflation performance in the short-term. As shown in Figure 7 and Table 9, Canadian CPI inflation is forecast to fall to 6.4% in 1983 and to reach 5.0% in 1987. In the long-term, it is expected that the rate of CPI inflation will average 5.5%, slightly lower than the 5.9% average rate over 1961 to 1981. The GNP deflator will likely follow the same path as the CPI in both the short and long-term.

As in the case of U.S. inflation, Canadian inflation could vary significantly from the central forecast, as shown by the range of uncertainty in Figure 7.

Figure 7
INFLATION - CANADA
CONSUMER PRICE INDEX

Table 9

CANADIAN INFLATION

Average Annual Change

Year	Consumer Price Index - All Items		GNP Deflator	
	CPI Index (1981=100)	Percent Change	GNP Price Index (1971=100)	Percent Change
1971-76	42.2[1]	8.3	100.0[1]	9.9
1976-80	62.9[1]	9.7	160.2[1]	9.0
1981	100.0	12.5	246.3	10.1
1982	110.8	10.8	272.6	10.7
1983	118	6.4	290	6.5
1984	124	5.5	306	5.5
1985	132	6.0	325	6.2
1986	140	6.0	346	6.5
1987	147	5.0	366	5.5
1987-92	192[2]	5.5	489[2]	6.0
1992-2002	327[2]	5.5	876	6.0

[1] Value for the first year of the period shown.
[2] Value for the last year of the period shown.

3. INTEREST AND EXCHANGE RATES

Figure 9 shows that since 1976, the Canadian dollar has been under tremendous pressure against the U.S. currency largely due to Canada's current account deficit and higher prices relative to those in the U.S. The high levels of interest rates experienced in Canada in the 1980's, shown in Figure 8, reflect the combined effect of a high interest rate anti-inflationary policy parallel to the U.S. restrictive monetary policy, exacerbated by the Canadian policy of maintaining interest rates sufficiently above U.S. rates to prevent further reductions in the Canadian/U.S. exchange rate.

The severity of the 1982 recession has forced central bankers in both the U.S. and Canada to implement more accomodative monetary policies. In particular, the U.S. has set more liberal reserve and monetary targeting objectives to support the recovery. In Canada, rather than continuing to focus on M1 growth in setting monetary policy, an exchange rate policy was developed to enable the Bank of Canada to respond to changes in the economic environment.

The Bank of Canada is expected to narrow the spread between Canadian and U.S. interest rates rather than permit a significant appreciation of the Canadian dollar. The favourable merchandise trade account should help to provide some stability to the dollar in the short-run. Further, Canada's improved relative inflation performance, capital inflows and positive interest rate differentials are likely to keep the Canadian dollar trading between 81.5¢ and 84.0¢ U.S. in the longer term.

Short-term interest rates will likely bottom out in 1983. As weak demand for new short-term credit exerts downward pressure on interest rates, Canadian 90-Day Finance Company Paper Rate in 1983 should drop to 9.0%, peak at 10% in 1985 and 1986 largely due to the economic cycle, and average 8.5% per year in the long-term as inflationary expectations moderate. This represents a decline in the real rate of interest on 90-Day Paper to 3.0% in the long run as borrowers shift to longer term paper.

Figure 8
INTEREST RATES-CANADA
90 DAY FINANCE COMPANY PAPER

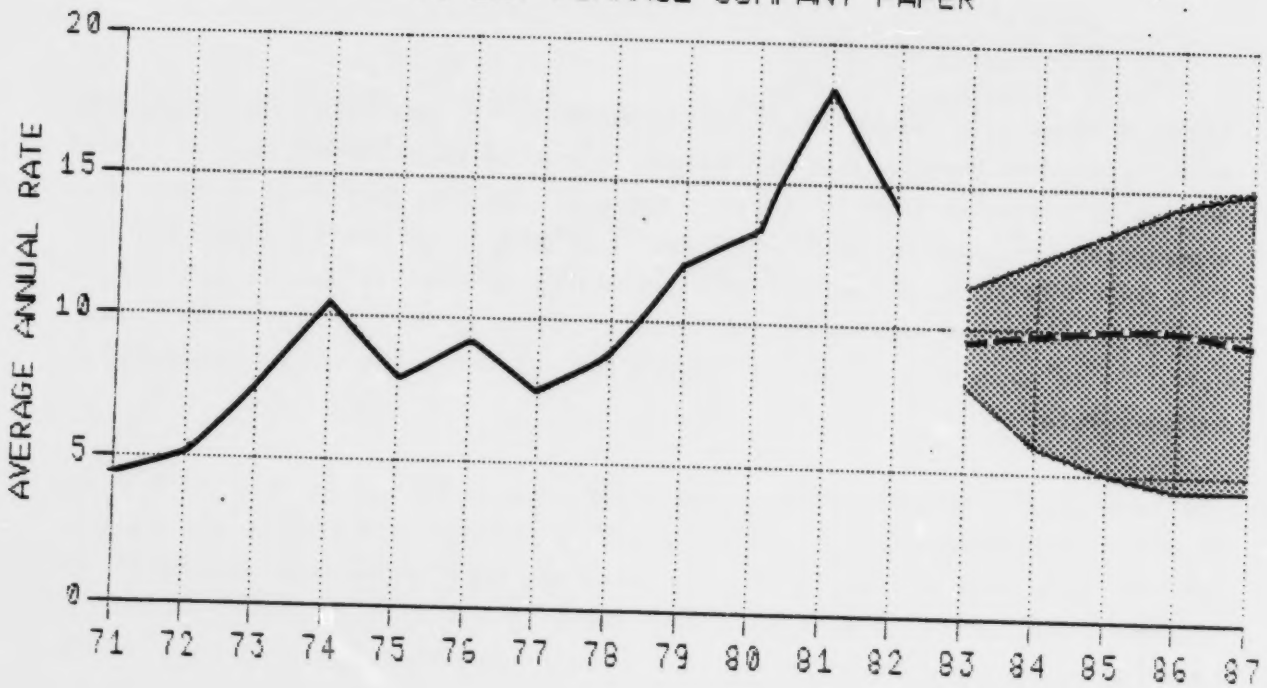


Table 10

CANADIAN INTEREST AND EXCHANGE RATES
Annual Averages

Year	Interest Rates		Exchange Rate
	90 Day Finance Company Paper	10 MYW Provincial Bonds	US¢/CAN$
1971	4.5	8.0	99.0
1975	7.9	10.2	98.3
1980	13.2	13.0	85.5
1981	18.3	15.9	83.4
1982	14.2	15.4	81.1
1983	9.0	12.0	81.5
1984	9.5	12.5	82.0
1985	10.0	13.0	82.5
1986	10.0	12.5	83.0
1987	9.0	11.0	83.5
1987-92	8.5	11.0	84.0
1992-2002	8.5	11.0	84.0

Figure 9
CANADIAN EXCHANGE RATE

Long-term interest rates are expected to decline in 1983 and stabilize thereafter as investors participate in the on-going bond market recovery where the fundamentals remain quite favourable, particularly given Canada's inflation prospects in the long-term. Canadian Provincial McLeod Young Weir Bonds should average 12% for 1983, rising to 13% in 1985 responding to the slight rebound in inflation, and settle at an average 11% to 2002. However, bond yields should remain relatively high compared to inflation given the concerns regarding a possible re-emergence of inflation together with large government deficits. Real interest rates will therefore continue to be high by historical standards as lenders exercise caution and increase their opportunity cost. B. C. Hydro Composite Bond rates, shown in Table 2, are expected to closely follow the McLeod Young Weir trends.

Depending on the direction of U.S. Federal Reserve policy plus other national and international economic/political events, the projections of interest and exchange rates could be significantly different than those presented here. For example, an even tighter U.S. monetary policy could be caused by unusually large government deficits in both Canada and the U.S., which would put upward pressure on long-term interest rates as soon as the recovery gets underway. Alternatively, an abrupt shift to easy money in the U.S. could cause a sharp decline in domestic interest rates. The wide range of possible future trends is shown in Figures 8 and 9.

4. HOUSING STARTS

Housing starts in Canada averaged approximately 199,000 units over the last twenty years, with a peak level of about 273,000 starts reached in 1976. Since 1976 however, substantial increases in house prices combined with high mortgage rates have dampened residential construction activity. In fact, in 1982 slightly under 126,000 starts were recorded - the lowest level since 1961.

The short-term outlook is for modest recovery in residential construction activity in 1983, followed by a stronger 1984. Currently, consumer confidence has been raised by recent drops in interest rates, as well as the new housing and related measures contained in the April Federal Budget, which will stimulate housing activity in the near-term. It is estimated that the recent budget measures alone could mean an additional 20,000 starts in 1983. It is projected that 160,000 units will be started this year, followed by 190,000 in 1984 as the economic recovery takes hold. Housing starts are forecast to peak in 1985 at the 205,000 level and drop to 175,000 units in 1987.

Over 1988 to 2002, housing starts in Canada are forecast at 180,000 per year, slightly higher than our previous forecast due to lower interest costs, and more stable prices which reflect the underlying demand for housing.

5. UNEMPLOYMENT RATE

As shown in Figure 10, the Canadian unemployment rate continued to trend upwards in the 1970's, resulting from high population growth and increasing female labour force participation rates translating into high labour force growth relative to growth in employment opportunities. The recent recession has taken a very heavy toll on the level of unemployed. There were approximately 1.3 million Canadians looking for work in 1982, up substantially from close to 0.9 million reported in 1981, even though labour force growth in 1982 was a meager 0.5%. Consequently, the 1982 unemployment rate soared to 11.1%.

It is anticipated that the unemployment rate will rise even higher to 12.5% in 1983 as labour force growth outpaces employment gains. Although the situation should improve after 1984, the rate of unemployment will stay uncomfortably above 10% to 1987 since employment growth will not be strong enough. It will likely take many years to recover the number of jobs lost in the recent recession and possibly some of them will never be recovered due to re-examination of work force requirements by employers.

Over the longer-term, as the economy gets back on the growth track, the unemployment rate is forecast to average 8.0%, compared with the 6.8% average rate over the 1970's. High levels of unemployment will remain a major structural problem in the Canadian economy. In order to return unemployment rates to historical levels, significant changes would have to occur in the areas of retraining, work-sharing, and the like.

It is hard to imagine unemployment rates higher than the central scenario. However, even higher unemployment rates in Canada can be experienced if, for example, our major trading partners imposed and maintained widespread trade barriers. Conversely, the uncomfortably high unemployment rates could be brought down if interest rates dropped another 4 or 5% and inflationary pressures were eliminated.

Figure 10
UNEMPLOYMENT-CANADA

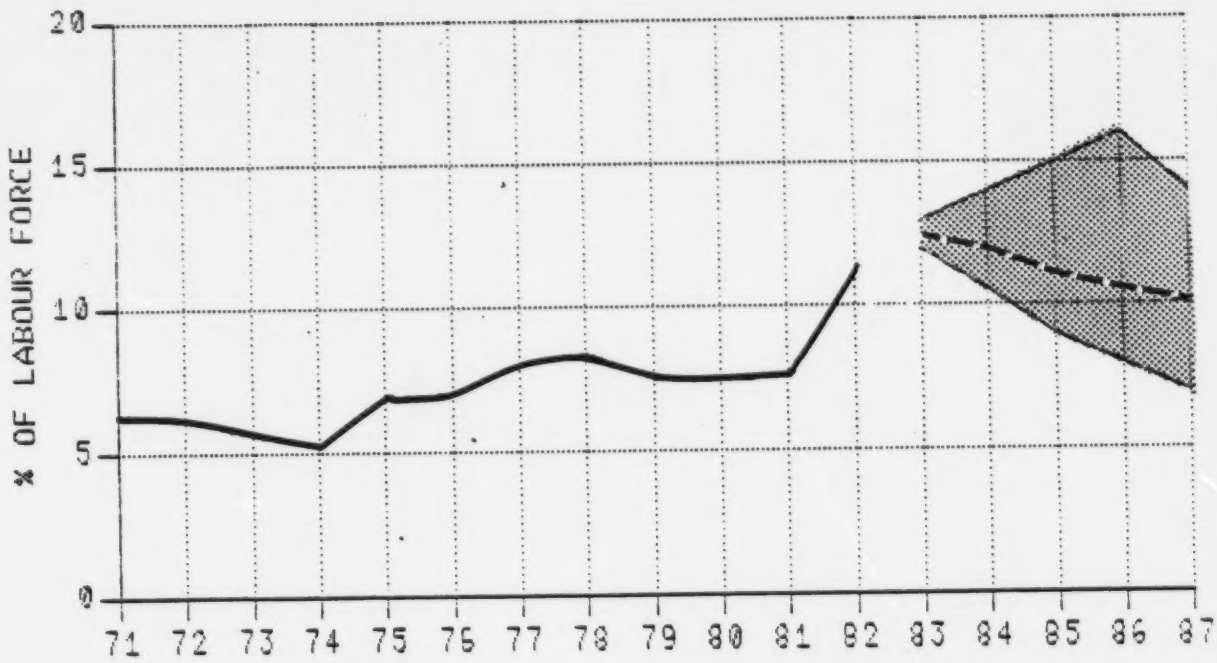


Table 11

B. C. ECONOMY CENTRAL FORECAST SUMMARY

Indicator	Actuals		Forecast						
	1981	1982	1983	1984	1985	1986	1987	1987-1992	1992-2002
REAL GDP (Billions of 1971 $)	16.6[1]	15.4[2]	15.7	16.6	17.6	18.4	18.7	22.8[4]	32.2[4]
REAL GDP (% Change)	2.0	-7.0	1.8	5.8	6.0	4.5	2.0	4.0	3.5
GDP DEFLATOR (% Change)	10.9	10.5	6.5	6.5	7.0	7.3	6.5	6.5	6.5
CONSUMER PRICE INDEX - Vancouver (% Change)	14.3	10.5	6.2	6.0	6.5	6.5	5.5	6.0	6.0
HOUSING STARTS[3] (Thousands)	41.6	20	26	33	35	31	26	33	36
POPULATION (Thousands)	2,744	2,783	2,817	2,865	2,920	2,979	3,040	3,376[4]	4,111[4]
POPULATION (% Change)	2.9	1.4	1.2	1.7	1.9	2.0	2.0	2.1	2.0
LABOUR FORCE (Thousands)	1,337	1,346	1,377	1,416	1,456	1,490	1,522	1,706[4]	2,186[4]
UNEMPLOYMENT RATE (%)	6.7	12.1	13.5	12.5	11.5	11.0	10.5	9.0	7.5

[1] Preliminary.
[2] Estimate.
[3] Excluding mobile homes.
[4] Value for the last year of the period shown.

V. BRITISH COLUMBIA ECONOMY

1. ECONOMIC GROWTH

Historically, B. C.'s economic performance has surpassed that for Canada as a whole. Table 1 shows that between 1961 and 1981 the provincial economy averaged a hefty 5.4% per year growth, versus a 4.6% national growth rate. In the past, B. C.'s ability to achieve relatively healthy growth has hinged on its ability to access and compete in the rapidly growing export markets for the province's natural resources. Similarly, in the several low-growth periods experienced in B. C. since 1961, the downturns can be traced directly to declines in export markets. This "boom or bust" characteristic is expected to continue, given B. C. economy's volatility and sensitivity to international economic developments. It is also important to note, from Figure 11 that since the early 1970's, apart from cyclical fluctuations, provincial growth has been trending downwards.

In B. C. the recent recession took hold in late 1981 and deepened through 1982, with substantial declines experienced in almost all sectors of the economy. Largely due to weak export markets and the resulting impact on the domestic economy, real economic growth in B. C. in 1982 fell by an estimated 7.0%, by far the most severe decline since the Depression. Only twice during the last thirty years has real B. C. GDP actually fallen, and that was by only 0.3% in 1958 and 2.4% in 1975.

Recovery is now underway, but despite our forecast of relatively strong U.S. housing starts of 1.6 million in 1983, B. C. is expected to achieve only a modest recovery of 1.8% real growth in GDP, reflecting the sluggishness of consumer expenditures and weak export markets for mining and pulp and paper. The outlook for the short-term is that B. C.'s economic activity will reflect improving conditions in both the U.S. and Canadian economies.

The continuing U.S. recovery, plus the improvement in other export sectors and the revival of consumer confidence should cause real economic growth in 1984 to leap to 5.8%. Additional investment spending, strong export markets, and increased domestic demand will be the main contributors to an expected 6.0% increase in real

Figure 11
BRITISH COLUMBIA ECONOMIC GROWTH RATES
REAL GDP

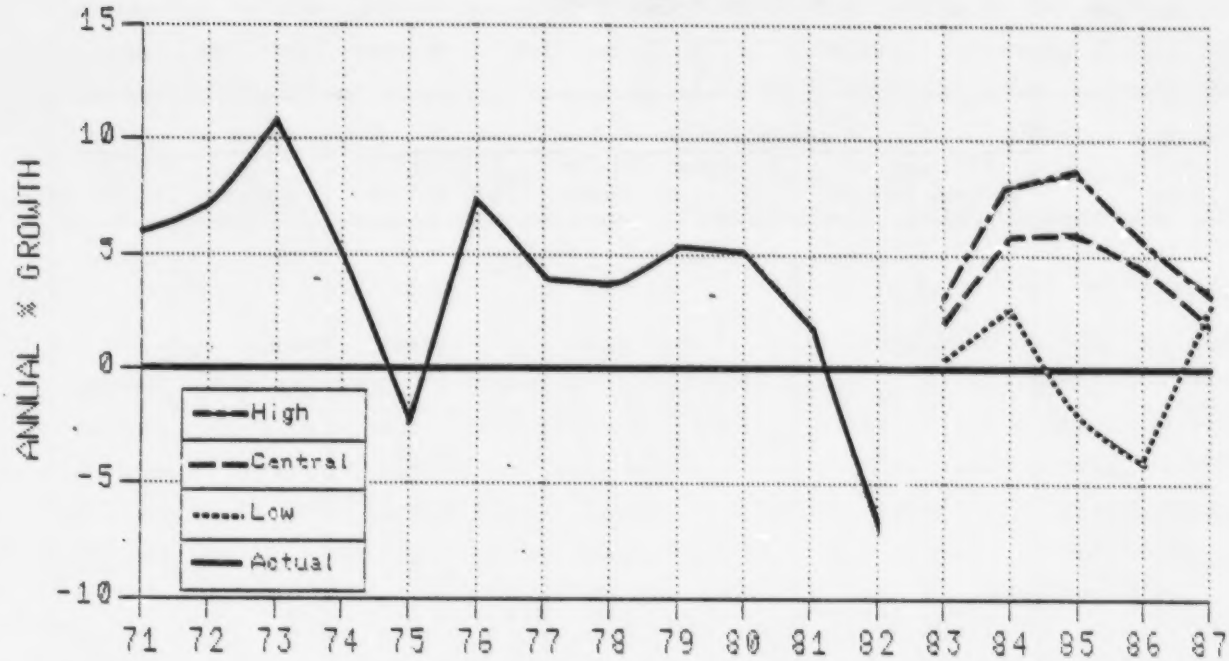


Figure 12
B.C. ECONOMY
REAL GROSS DOMESTIC PRODUCT
(Billions of 1971 $)

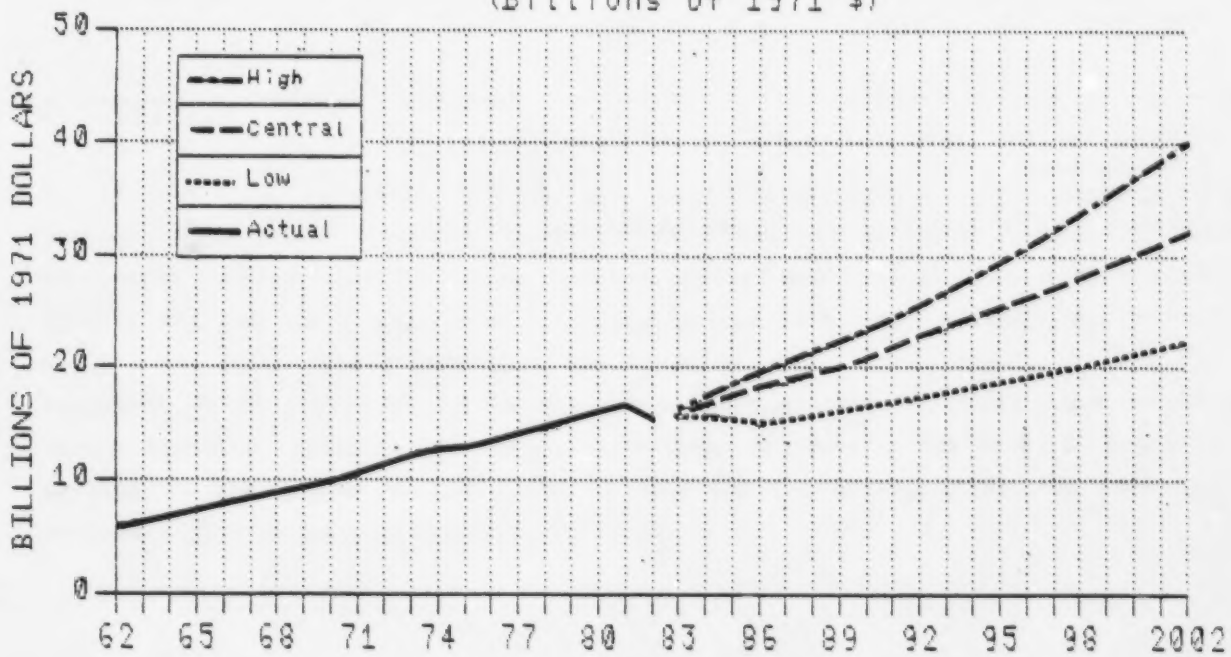


Table 12

B. C. ECONOMIC GROWTH

Year	Nominal GDP		Real GDP	
	Billions of Current Dollars	Annual Growth Percent Change	Billions of 1971 Dollars	Annual Growth Percent Change
1971-76	10.4[1]	16.7	10.4[1]	5.5
1976-80	22.5[1]	12.8	13.6[1]	4.0
1981	41.2[2]	13.1	16.6[2]	2.0
1982	42.2[3]	2.4	15.4[3]	-7.0
1983	45.7	8.3	15.7	1.8
1984	51.6	12.9	16.6	5.8
1985	58.5	13.4	17.6	6.0
1986	65.6	12.1	18.4	4.5
1987	71.2	8.5	18.7	2.0
1987-92	119[4]	10.8	22.8[4]	4.0
1992-2002	315[4]	10.2	32.2[4]	3.5

[1] Value for the first year of the period shown.
[2] Preliminary.
[3] Estimate.
[4] Value for the last year of the period shown.

economic growth for 1985. After 1985 the normal business cycle suggests a moderation in the rate of economic growth, and at the bottom of the next cycle, around 1987, real economic growth in B. C. is forecast to average 2.0%. The widespread employment cutbacks caused by the recent recession, combined with the relatively modest level of investment in major projects in B. C. expected over the coming decade, will tend to keep B. C.'s unemployment rate in the double digits until after 1987, despite the recovery. This underutilization of resources will result in actual B. C. GDP substantially lower than potential.

B. C. real economic growth in the long-term is projected to average 4.0% per year between 1988 and 1992, followed by a slightly lower 3.5% rate until the next century. B. C.'s economy is expected to become more diversified in the long-term, with expanded export markets and more emphasis on secondary manufacturing. As the provincial economic base expands, there will also be potential for growth in the service sector, particularly tourism, recreation and finance. There will be relatively less energy investment in the province however, resulting from the recent softening in world oil prices and reduced domestic demand for energy. All in all, cautious optimism is in order with respect to B. C.'s future economic performance, given the major challenges it will face to the end of the century. The projections of real B. C. GDP have more downside risk as shown in Figure 12 by the larger variations between the low and central versus the high and central forecasts.

2. INFLATION

Not surprisingly, inflation in B. C. has, by and large, been tracking the national average rather well. However, in recent years some unique characteristics of the Provincial economy such as higher housing prices, poor overall labour-management climate and the rapid increases in energy prices from 1980 to 1982, have pushed B. C.'s inflation rate higher than the Canadian rate. For example, in 1981 the Vancouver Price Index rose 1.8% above the Canadian rate to 14.3%. Due to the recent economic recession and restraint program, consumer prices in B. C. began to decline in the summer of 1982, and by year-end the average inflation rate had dropped 3.8% from the previous year to 10.5%.

Figure 13
INFLATION-B.C.
VANCOUVER CONSUMER PRICE INDEX

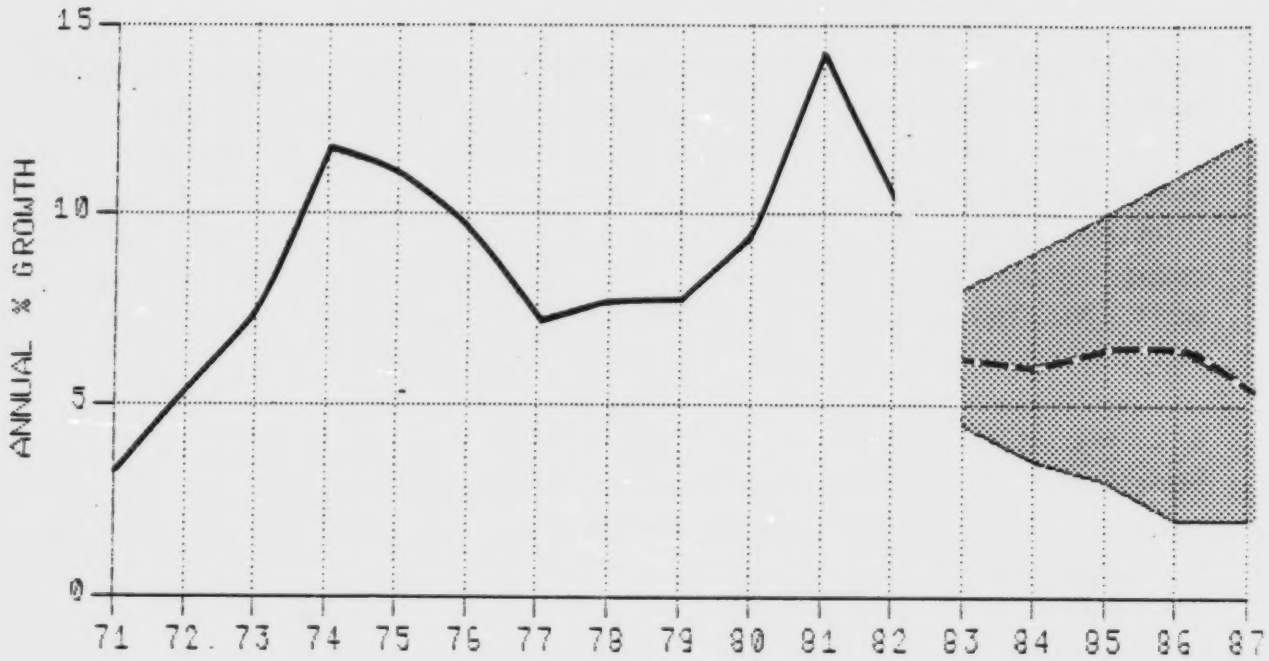


Table 13

B. C. INFLATION

Average Annual Change

Year	Vancouver Consumer Price Index - All Items		GDP Deflator	
	CPI Index (1981=100)	Percent Change	GDP Price Index (1971=100)	Percent Change
1971-76	41.9[1]	8.9	100.0[1]	10.6
1976-80	64.3[1]	9.2	165.4[1]	8.5
1981	100	14.3	248.2[2]	10.9[2]
1982	110.5	10.5	274.2[3]	10.5[3]
1983	117.4	6.2	292.0	6.5
1984	124.4	6.0	311.0	6.5
1985	132.5	6.5	332.8	7.0
1986	141.1	6.5	357.1	7.3
1987	148.8	5.5	380.3	6.5
1987-92	199.1[4]	6.0	521.0[4]	6.5
1992-2002	356.6[4]	6.0	978.0[4]	6.5

[1] Value for the first year of the period shown.
[2] GDP Deflator for 1981 is preliminary.
[3] GDP Deflator for 1982 is an estimate.
[4] Value for the last year of the period shown.

As shown in Figure 13 and Table 13, a continuing significant decline in B. C.'s inflation rate to 6.2% is expected in 1983, followed by a levelling off to 6.0% in 1984. The cost-push and demand-pull inflation factors usually present during normal recovery periods will be relatively absent from this economic recovery due in part to the combined effect of government restraint programs, low levels of capacity utilization and high unemployment.

A slight increase in inflation to 6.5% is likely in 1985 and 1986 during the pickup in economic activity. However, lower energy price increases, reduced expectations, productivity gains, and close control on monetary policy by central banks should keep B. C.'s inflation around 6% average in the long-term, which is approximately the same as the average rate experienced over the 1961 to 1981 period.

3. POPULATION

Figure 14 shows that over the last decade, B. C.'s population growth has been very volatile but has experienced a decelerating growth trend attributable to steadily declining fertility rates and net-migration trends. However, wide fluctuations in annual growth rates reflect variable total net-migration patterns induced by such factors as changing lifestyles and employment prospects together with occasional refugees from emergencies in other nations. B. C.'s total population growth averaged 2.3% between 1971 and 1981.

Table 14 presents B. C. population forecasts to the year 2002. In the short-term, population growth is expected to rise gradually from 1.2% in 1983 to 2.1% in 1987, reflecting the pick-up in provincial economic activity and corresponding positive impact on total net-migration. In the longer term, B. C.'s population is estimated to increase by 2.2% annually between 1988 and 1992 followed by 2.0% annual growth between 1993 and 2002. The forecasts are marginally higher than our previous estimates, because of and assumed slowdown in mortality rates in the population age 60+ and a slightly higher net-migration projection for the 1988 to 1992 period.

Figure 14
POPULATION-B.C.

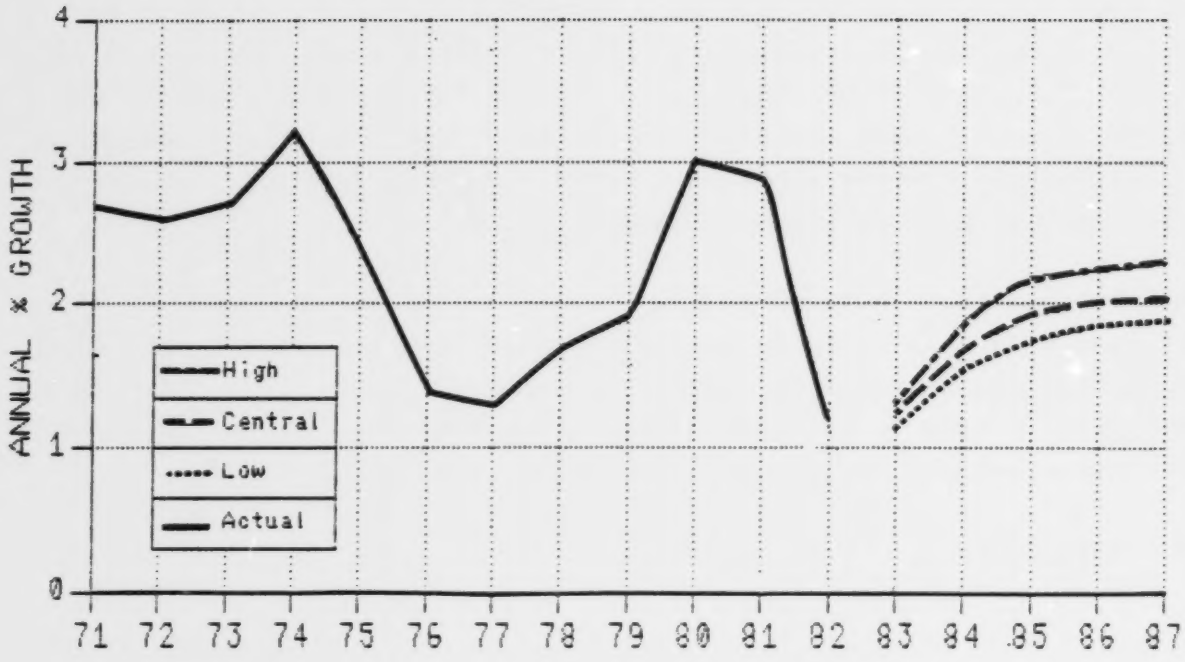


Table 14

B. C. POPULATION, UNEMPLOYMENT AND HOUSEHOLDS

Year	Population (Thousands)	Labour Force (Thousands)	Unemployed (Thousands)	Unemployment Rate (%)	Households (Thousands)
1970	2,128	871	67	7.6	620
1975	2,433	1,087	92	8.5	757
1980	2,666	1,278	87	6.8	898
1981	2,744	1,337	90	6.7	1,005
1982	2,783	1,346	163	12.1	1,022
1983	2,817	1,377	186	13.5	1,045
1984	2,865	1,416	177	12.5	1,073
1985	2,920	1,456	167	11.5	1,104
1986	2,979	1,490	164	11.0	1,136
1987	3,040	1,522	160	10.5	1,168
1987-92	3,376[1]	1,706[1]	154[1]	9.0	1,337
1992-2002	4,111[1]	2,186[1]	164[1]	7.5	1,717[1]

[1] Value for the last year of the period shown.

4. LABOUR

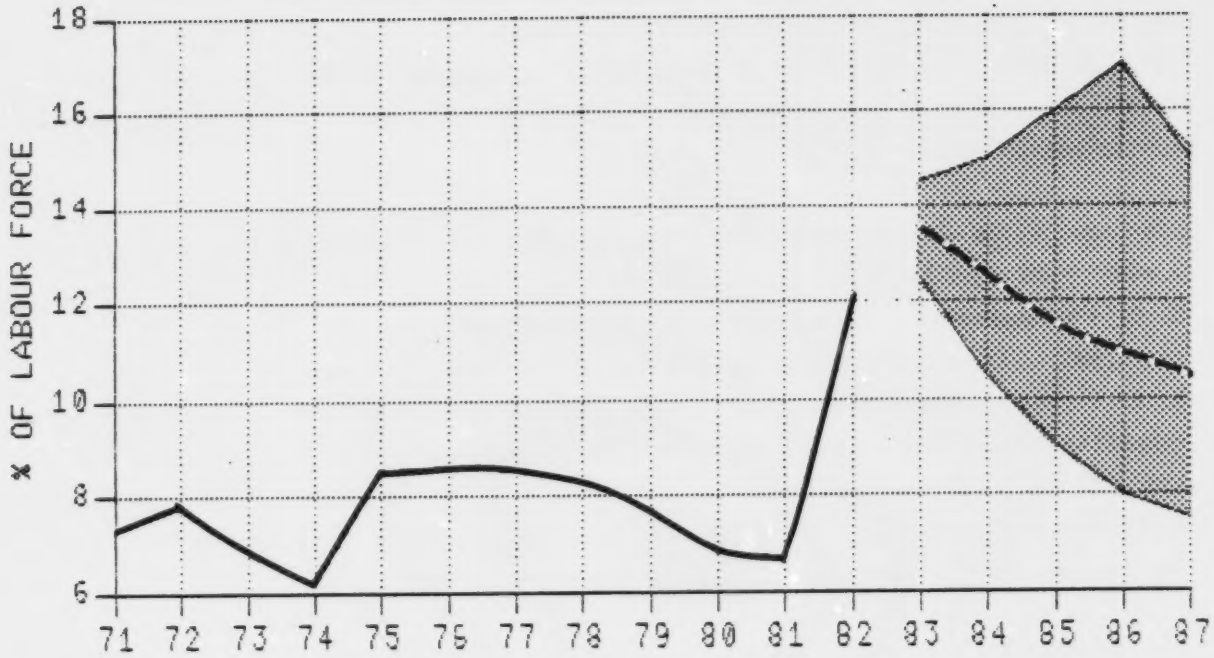
Historically, B. C.'s labour force growth has been quite volatile due to the fluctuations in net-migration. However, increasing female labour force participation rates as well as high growth in B. C.'s working age population have kept labour force growth relatively strong over the last decade. From 1971 to 1981, B. C.'s labour force grew by a healthy 4.0% per year on average. In 1982, labour force growth fell to 0.7% because of the "discouraged worker" effect. The outlook in the near-term is for renewed growth in B. C.'s labour force at close to historical rates of growth as the economy heads into recovery. Moderate labour force growth in the order of 2.4% per year is expected in the long-term, assuming stable net-migration and an eventual levelling out of growth in female labour force participation rates.

Over the period 1971 to 1981, employment growth in B. C. has averaged 4.1% per year versus 3.0% for Canada. Despite higher employment growth relative to Canada, B. C.'s unemployment rate has exceeded the Canadian rate with the exception of 1980 and 1981. Essentially, strong provincial employment creation was outpaced by B. C.'s robust labour force growth, thus leading to higher unemployment rates. The recession caused a dramatic hike in B. C.'s unemployment rate in 1982 to 12.1%, and the jobless rate is expected to peak around 13.5% in 1983. Unemployment will unfortunately remain a serious problem for many years to come and is unlikely to fall below the 10% level for at least five years.

5. HOUSING

B. C. housing starts continue to be strongly correlated with economic activity, net-migration patterns, and housing incentive programs that are implemented from time to time by the Federal and Provincial governments. Figure 16 and Table 15 show that over the 1970's, total starts in B. C. averaged close to 33,000 units per year, with single dwellings comprising the majority of these starts. The high level of housing starts in 1980 and 1981 reflects the Federal MURB program, high

Figure 15
UNEMPLOYMENT RATE-B.C.



net-migration and escalating house prices. In fact, 1981 turned in a record 41,585 starts, largely concentrated in multiples, since investors were spurred to take advantage of expiring MURB tax shelters. However, housing starts in 1982 fell to a disappointing 19,807 starts, due to record high interest rates, rising unemployment, and a large existing housing stock.

The anticipated economic recovery in B. C. should result in slow improvement in residential construction activity. In addition to the housing incentive programs in place, lower interest rates and housing prices mean that B. C. housing starts will likely reach 26,000 units in 1983, peak at 35,000 in 1985, and fall off to 26,000 in 1987. This pattern reflects the projected economic growth trend in the near-term.

Demographic trends will largely dictate provincial housing activity in the long-term. The average number of persons per household is expected to gradually trend downwards due to rising headship rates. Household formation will increase, responding to lower interest rates and improvement in real incomes. Housing starts are forecast to average 33,000 units per year between 1988 and 1992 and 36,000 units per year thereafter. The relative split between single and multiple starts is shown in Table 15.

Figure 16
HOUSING STARTS BC

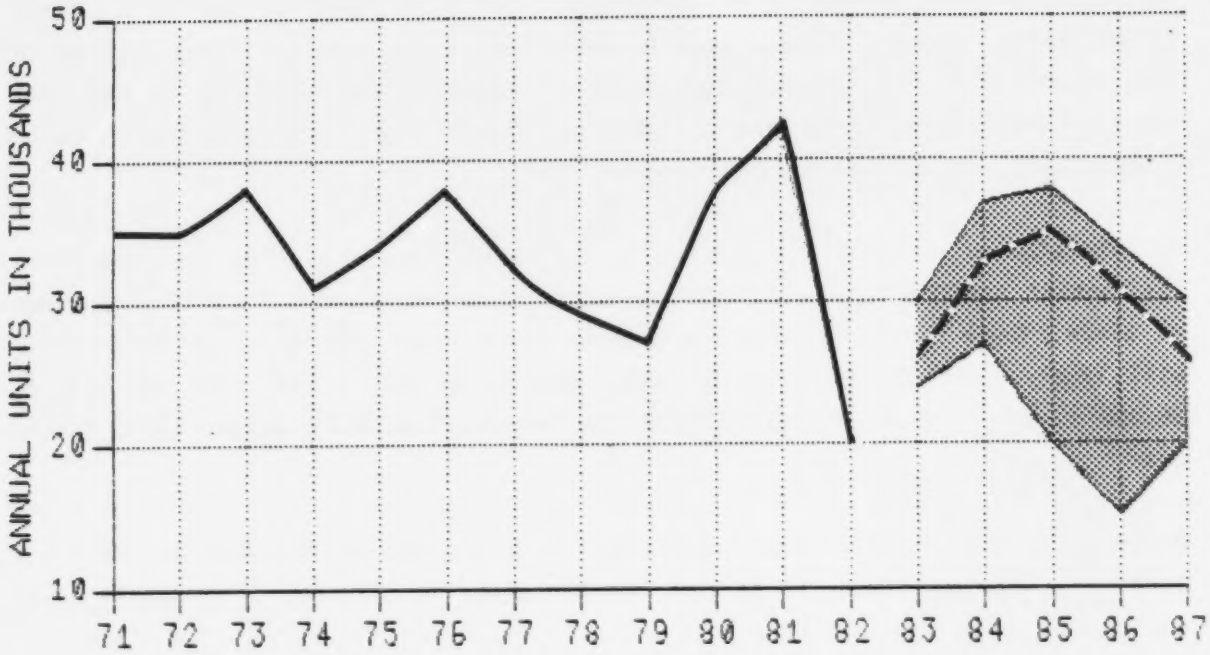


Table 15

B. C. HOUSING STARTS

Year	Single[1]	Multiple	Total
1971	18	17	35
1975	19	15	34
1980	23	15	38
1981	19	23	42
1982	7	13	20
1983	12	14	26
1984	18	15	33
1985	20	15	35
1986	17	14	31
1987	16	10	26
1987-1992	17	16	33
1992-2002	16	20	36

[1] Excludes mobile homes.

Table 16

B. C. CENTRAL SECTORAL GROWTH[1]

Restrained Recovery

	Average 1961-1980 Share of Economy	1982 Estimated Actual Value	Real % Change in Value Added						
			1982	1983	1984	1985	1986	1987	87-2002
	%	$ Millions							
Agriculture[2]	1.6	208	2.5	3.5	4.0	4.0	3.0	3.0	3.0
Construction	7.2	1,055	-5.0	1.0	3.5	8.0	4.0	3.0	3.0
Financial Services	12.3	1,608	-3.8	1.5	3.4	4.0	4.0	4.5	3.9
Forestry[2]	11.5	1,201	-16.0	8.0	22.0	16.0	10.0	-8.0	1.5
Manufacturing	7.7	1,076	-5.5	3.1	4.3	3.5	3.5	3.0	3.0
Mining[2]	5.0	455	-18.0	5.0	26.0	14.0	-5.0	2.0	5.8
Retail Trade[3]	13.0	1,766	-11.0	2.0	5.9	8.7	8.8	4.0	3.5
Transportation	11.1	1,728	-6.0	1.0	4.5	3.0	3.0	3.5	4.0
Utilities	3.4	512	-3.8	1.0	2.5	3.7	3.2	2.5	2.5
Community Business & Personal Services	19.8	3,033	-5.8	1.0	2.1	3.2	4.0	4.5	4.8
Fisheries[2]	0.4	30	-12.0	0.0	2.0	2.0	3.5	2.0	1.0
Government	7.0	912	-2.0	-4.0	0.0	1.0	1.5	1.0	1.5
Total Gross Domestic Product	100.0	13,585	-7.0	1.8	5.8	6.0	4.5	2.0	3.7

[1] All figures in this table are based on estimates of the Gross Domestic Product at factor cost (value-added approach). An alternative measure of GDP at market prices, i.e. the price paid by consumers, is given in Table 11, with total 1982 GDP of $15.4 billion vs. the $13.6 billion above. The two values are compatible, just different ways of measuring the same thing. Note that the aggregate economic growth rates using the two methods are identical.

[2] The percentage share of the economy for these primary industries combines primary activity and dependent or related manufacturing activity.

[3] Includes wholesale trade. For the purpose of this table, we have assumed wholesale activity proportional to the projected growth rates in the retail sector.

VI. B. C. SECTORS

In preparing the provincial forecast, significant efforts were made to identify growth prospects for the main sectors of the British Columbia economy. In particular the forest, mining, retail (commercial) and energy sectors were the subject of individual research studies undertaken by private consultants on behalf of B. C. Hydro. In addition, an extensive survey of relevant publications, plus interviews with government and private sector experts provided information on capital investments, market developments, and technological and structural changes that might impact the future growth of B. C.'s industrial sectors.

In preparing the sectoral forecasts, first of all a comparison was made of the growth rates provided by the sources described above and those arrived at by simulating the provincial economy under a given set of assumptions for the U.S. and Canadian economies. These figures were then modified, by applying a considerable amount of professional judgement, to arrive at the final sectoral forecasts which, when aggregated, yielded the total GDP growth rates in this report.

The base case of the sectoral forecast is presented in Table 16. The statistical information is grouped according to the standard industrial classification. The relative importance of each sector is indicated by its dollar contribution in 1982 and by the average percentage contribution to the economy between 1961 and 1980. It is interesting to note that B. C.'s traditional primary industries (agriculture, forestry, mining and fisheries) and their related manufacturing activities have average 18.5% of total economic activity, and that during the deep recession of 1982 they fell to 13.9% of total GDP. The service sectors make up by far the largest share on average, with Community Business and Personal Services, which includes Tourism, accounting for 19.8%, Retail and Wholesale Trade 13.0%, Transportation 11.1% and Financial Services 12.3%.

In addition to the forecast of expected growth for the 12 main sectors of the provincial economy, shown in Table 16, the possible range of growth for those sectors, under the pessimistic and optimistic scenarios, are summarized in Tables 31 and 33 of the Statistical Summary.

Inevitably, the nature of the economy is expected to change somewhat over the next 20 years. Generally speaking, the service sector will increase in importance, led by robust growth in Community Business and Personal Services, Transportation, Retail Trade and Financial Services. On the goods producing side, Mining and Smelting will experience the strongest growth of all. In the long-term the sectors which are expected to decline most significantly in their share of the economy are Fisheries, Government, Forestry and Utilities.

Although primary industries no longer account for the largest share of B. C. economic production, they are still major catalysts of provincial economic activity and their production, consumption and job creation spread throughout the economy and strengthen the activities of the service industries. Accordingly, prospects for the two largest and most energy-intensive primary sectors, Forestry and Mining and Smelting, will now be reviewed in detail. The outlook for Tourism and Retail Trade, two of the key service industries, will also be discussed.

1. FORESTRY

An important source of information used in preparing this section was the consulting study done for B. C. Hydro by Woodbridge, Reed and Associates.[1] However, the consultants reports was not the only source of information considered in developing our forest sector outlook and the projections in this document differ somewhat from those provided by the consultant. This is particularly true with respect to the timing and vigour of the recovery and expected pulp and paper industry investment in Chemical Thermo-Mechanical Pulping (CTMP) and Thermo-Mechanical Pulping (TMP). In general, this Long-Term Economic Outlook is more conservative in the number of potential mills using this technology and the pace at which the industry will shift to TMP. There is agreement in the respective outlooks for lumber markets but the consultants' forecasts of pulp and paper production and prices in 1983 - 1986 and the depth of the business cycle down-turn in 1987 have been moderated.

The following assumptions are built into the forecast:

- The industry will not achieve the same long-term sustained growth rates experienced over the previous twenty years.

- Fibre supply will not generally be a constraint on production for the next ten years. However, in the years beyond 1992, the estimated availability of sawlogs places a limit upon the production of softwood lumber, pulp and veneer.

- Offshore exports are expected to rise relative to exports to the U.S. during the forecast period. Most companies will actively pursue export market diversification for all forest products.

- The industry will tend more towards higher value added products as well as better whole-tree utilization in the future.

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[1] "Projected Energy Requirements to the year 2002. B. C. Forest Industry" 1983 Revision, prepared by Woodbridge, Reed and Associates Ltd., April 1983.

- Market conditions will limit the increase of capacity. Capital investment will be geared to higher efficiency and productivity gains.

- The reduced availability of fibre will continue to motivate innovation to produce high yield and high quality pulps.

A perspective on B. C. Forest Sector growth is given in Figure 17 and Table 17. Figure 17 shows the projected growth in B. C. forest sector real value added, with the base case marked by a solid line and the low and high boundaries indicated by the shaded area.

1.1 Lumber

The projected increase in housing starts in the United States, coupled with an improved economic outlook for Canada and the U.S., should help to sustain the price and demand increases that B. C. lumber products have been experiencing since the last quarter of 1982. As illustrated by Table 17, the real value of production is forecast to grow about 16% per year on average over the 1983 to 1986 period and about 2% in the long-run. The impressive rate of production growth expected over the next four years reflects in part the recovery from the unusually low levels of the 1981-82 recession. Production is expected to decline again around 1987, when the North American economies are likely to experience another business cycle downturn.

1.2 Plywood

Strong competition from low cost composite structural boards will significantly reduce the market share of plywood and veneer,particularly in the Canadian and U.S. markets. Consequently, our forecast calls for negative growth between 1987 and the year 2002, both in terms of production and real value. Within the more costly coastal region, production is expected to decline further and to shift towards a heavier reliance on sanded and specialty boards. Competition in the domestic market is likely to force the industry to seek a larger share of the Japanese market and exports should therefore become more important as a percentage of total plywood shipments.

Figure 17
B.C. FOREST SECTOR
REAL VALUE ADDED

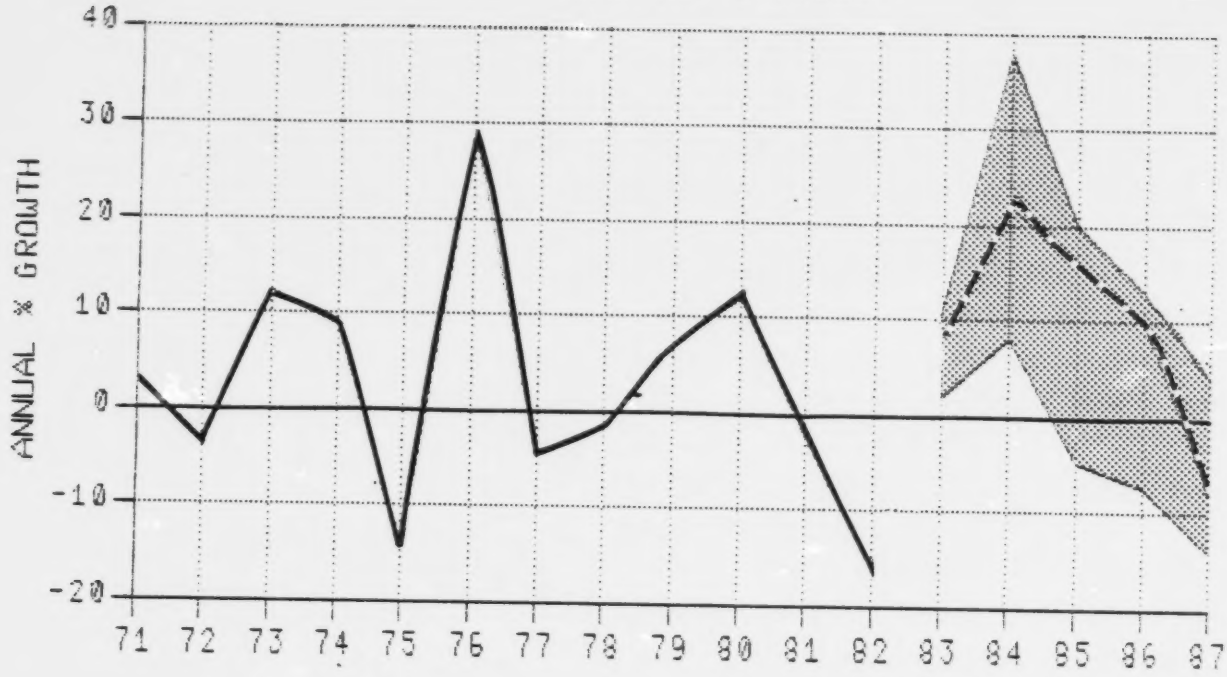

Table 17

FOREST SECTOR IN B. C.

Average Annual Growth Rates

	1971-81		1982	1982		1983		1984		1985		1986		1987		1988-2002	
Wood Products	Pro-duction	Value[1]	Value of Forest Products Exports from B. C.[2] $ (Millions)	Pro-duction	Value	Pro-duction	Value	Pro-duction	Value	Pro-duction	Value	Pro-duction	Value	Pro-duction	Value	Pro-duction	Value
Lumber	3.4	8.8	1,814	-5.4	-15.0	6.0	10.0	11.0	25.0	6.4	20.0	5.2	8.3	-7.3	-15.0	0.5	2.0
Plywood	1.6	9.7	115	-14.7	-35.0	11.0	20.0	12.0	20.0	8.4	15.0	10.5	11.0	-8.7	-10.0	-1.0	-1.0
Pulp and Paper																	
Market Pulp	2.9	12.5	1,520	-1.0	-16.0	5.0	2.0	11.0	20.0	4.5	10.0	-3.0	4.0	-9.0	-9.0	2.0	5.5
Newsprint	1.9	11.4	567	3.5	-10.0	4.0	1.0	8.3	5.0	-4.0	10.0	-4.0	5.0	-5.0	-5.0	-1.0	3.0
Other Paper and Paper Board	5.8	11.2	166	0.0	-12.0	10.0	3.0	20.0	25.0	9.0	15.0	3.0	6.0	-8.0	-15.0	1.5	3.5

Sources: Statistics Canada 35-001, 35-003, 25-202
Woodbridge, Reed and Associates Ltd.
Corporate Economist Department

[1] Values are estimates by the consultant of the average annual rates of growth of the total real value of production.
[2] B. C. Forest Industry Statistical Tables - compiled by Council of Forest Industries British Columbia.
The lack of data on forest sector production by commodity made it necessary to use the values of commodity exports as a proxy. Approximately 80% of the total lumber production, 20% of the Plywood, 90% plus of market pulp and about 75% of the newsprint production is exported.

1.3 Market Pulp

Production levels of market pulp will not return to the record high level experienced in 1980 until 1985. Furthermore, long-term growth projections have been reduced and the real value of production is now forecast to grow at an average annual rate of only 5.5%, compared with last year's forecast of 9.0%. Table 17 shows the slight recovery expected during 1983 and the more vigorous pick-up of production and value in 1984 and 1985. Most of the production increase is expected in the interior region, in light of relative wood supply and production costs. By 1993 the Pulp and Paper industry will have invested in four new greenfield market pulp mills. These mills will be located in the Central Interior region and will be using chemi-thermomechanical pulp (CTMP) or thermo-mechanical pulp (TMP) technology. In addition, the Vancouver Island region (Port Alice) is projected to have one bleached sulfite pulp mill converted to bleached CTMP. The majority of the increased production after 1993 is estimated to be from the installation of existing integrated mills of new paperboard machines and new production lines. Up to three new greenfield market pulp mills using CTMP/TMP could also be built in the Central Interior.

1.4 Newsprint

Growth prospects for newsprint exports are modest. In fact the long-run forecast in Table 17 is for a decline in production growth and only a 3% per year increase in value. Due to world over-capacity in newsprint, the general projection for capacity utilization rates in Canada during the mid-eighties is in the region of 85%, although higher operating rates have been assumed for B. C. at that time due to increased Asian demand which can be readily served by provincial producers.

We estimate that there will be no further expansion of newsprint capacity within the province. Rather, existing newsprint capacity will be systematically reduced as newsprint machines are converted to the production of higher value added printing and writing papers. It is projected that between 1983 and 1995 newsprint capacity will be reduced by 580,000 tonnes per year, while printing paper capacity will rise by a similar amount.

It is estimated that by 1985, 80% of the newsprint production will drop from a weight of 48.6 to 45.0 grams/m^2. As a result of this decline in weight, there will be a reduction in the tonnage capacity of newsprint machines and a slight increase in electrical demand and value added per tonne of newsprint produced.

2. MINING AND SMELTING

This section is largely based on consulting studies undertaken for B. C. Hydro by H. N. Halvorson Consultants Limited.[1] The forecasts in the Halvorson Coal Study were used without modification. However, because the consultant's assumptions on the rate of economic recovery in the U.S. were considered to be on the optimistic side, the metals forecasts for gold, silver, molybdenum, lead and zinc prices and production have been reduced slightly.

The mining sector forecasts are based on the following assumptions:

- The Japanese market will continue to be the main driving force for coal developments in B. C.

- Coal shipments to Japan will continue to be under contracted tonnage.

- The Australian, South-African and Colombian producers will be the most important competitors to coal exports from B. C.

- Mine capacity utilization will be below historical record.

- The largest share of B. C. produced bituminous coal will continue to be exported overseas.

- The North American markets will continue to be the dominant force in the pricing of B. C. metal production.

- Market demand, availability of good ore, and relatively cheap power should encourage the metallurgical industry to invest in new facilities.

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[1] "Forecast of Coal Mining Activity to 2002" and "Forecast of Power Consumption by the B. C. Mining and Smelting Industries" prepared by H. N. Halvorson Consultants Ltd., April 7 1983.

- Aside from coal, non-metallic minerals were not specifically studied. For the metallurgical industry, lead, zinc, copper and aluminum smelters and ferrosilicon/silicon/magnesium production were considered.

- A total of twenty seven large and medium sized metal mines have been included in the statistical analysis. There are really only four significant types of metal mines in the province - copper, molybdenum, lead/zinc and gold/silver. Most of the silver, gold and molybdenum produced is by-product to copper and lead/zinc productions.

- The copper and molybdenum mines are almost exclusively large, low grade, open-pit operations, the lead/zinc mines are large, high grade underground mines, and the silver/gold mines are small, high grade underground mines.

- Copper production will continue to dominate metal mining and smelting. Up to 50% of all new mines expected to be producing within the forecast period will be copper mines, and most of this new copper will be primary metal produced mainly from large open-pit mines.

- A total of nineteen new major metal mines are expected to be in production during the 1982 to 2002 period. About 40% of current existing mines have an expected life past the year 2002. Only one new metal, mercury, is forecast to being production.

An aggregated view of the historical performance of the B. C. mining industry and its estimated growth to 1987 is presented in Figure 18. The extreme cycles that have characterized mining in the past are forecast to continue between 1983 and 1987. However, at the peak of the new cycle in 1984, the total real value of production is not forecast to reach the same level of 1977. Similarly, the anticipated mining recession in 1986 seems relatively mild when compared with 1974-75 or 1982. Additional information on the specific growth rates of the different commodities and their contribution to the total value of mining production is provided in Table 18.

Figure 18
B.C. MINING SECTOR
REAL VALUE ADDED

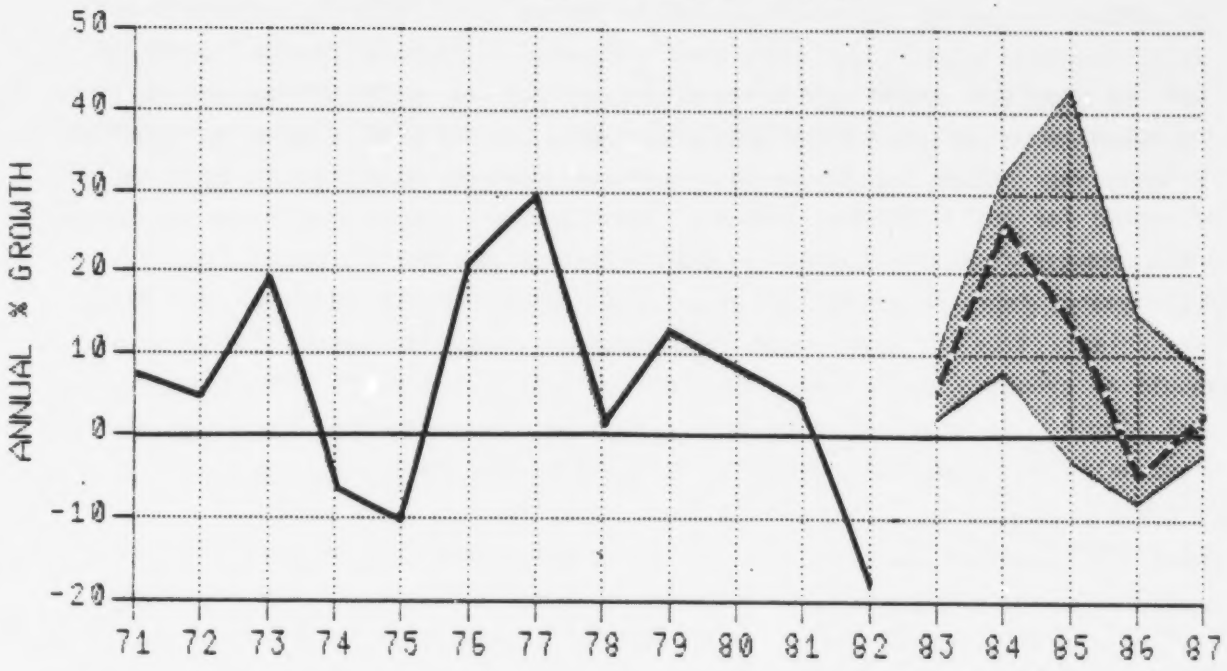

Table 18

MINING SECTOR IN B. C.

Average Annual Growth Rates

Commodity	Estimated Value of Production 1982 Millions Current $[1]	1982		1983		1984		1985		1986		1987		1988-2002	
		Production	Value[2]	Production	Value	Production	Value	Production	Value	Production	Value	Production	Value	Production	Value
Coal															
Thermal	186	120.0	102.0	-37.0	-47.0	0.0	0.0	0.0	0.0	4.7	15.0	109.0	147.0	4.0	6.0
Metallurgical	652	-19.0	-2.0	-17.0	-24.0	43.0	43.0	30.0	39.0	7.6	8.0	0.0	-5.0	3.5	5.5
Copper	483	-15.0	-26.0	4.0	10.0	11.0	-15.0	11.0	45.0	2.0	6.0	0.0	-11.0	3.3	5.0
Molybdenum	185	-19.0	-42.0	-35.0	8.0	60.0	12.0	15.0	30.0	15.0	59.0	1.0	1.0	1.1	2.5
Zinc	55	0.0	-22.0	-11.0	-2.0	27.0	76.0	30.0	25.0	0.0	0.0	0.0	0.0	5.0	7.5
Lead	45	13.0	-25.0	-19.0	-20.0	25.0	87.0	-11.0	19.0	-1.0	-30.0	0.0	0.0	1.1	4.2
Silver	135	-1.0	-14.0	-13.0	15.0	25.0	39.0	-9.0	10.0	-9.0	1.0	-2.0	6.0	1.0	4.0
Gold	112	-5.0	-14.0	11.0	23.0	4.0	20.0	4.0	12.0	-6.0	-1.0	17.0	22.0	4.4	6.0

Source: H. H. Halvorson "Forecast of Coal Mining Activity to 2002", "Forecast of Power Consumption by the B. C. Mining and Smelting Industries".

[1] Province of B. C. Ministry of Energy, Mines and Petroleum Resources.
B. C. Mineral Quarterly - February 1983 and Preliminary estimates 10 December 1982.

[2] Average annual real rate of growth based on 1983 constant dollars.

2.1 Coal

Coal is now the biggest revenue earner within the B. C. mining sector. The estimated value of production in 1982, shown in Table 18, indicates that coal revenues were higher than those of copper, molybdenum, zinc and lead combined, and accounted for 45% of mining revenues. Although more competitive crude oil prices and a reduced forecast of steel production worldwide have tended to reduce future coal demand, improved production volumes and prices are still projected. This is particularly true for coking or metallurgical coal, for which long-term growth should be around 3.5% per year in volume and 5.5% in value. By 1986/1987, thermal coal should also start to show some growth as new production from high quality mines helps to expand the share of B. C. coals within the Asian market.

2.1.1 Metallurgical Coal

In 1982, B. C. and Alberta producers shipped 11.6 million tonnes, down 13% from 1981. In 1982, although 73% of shipments went to Japan, these exports represented only 73% of the contracted quantity. This was a result of the dismal performance of the Japanese steel industry, a performance quite typical of the world industry.

This depressed situation is forecast to continue to at least the end of the decade. Japan has contracted for much more coal than it requires not only from B. C. and Alberta, but also from other suppliers, in particular Australia. Growth in sales to other countries is not sufficient to absorb the B. C. surplus for some time.

Using 1985 for discussion purposes, sales by B. C. mines are forecast to be 13 million tonnes compared to existing contracts totalling 14 million tonnes. However, installed B. C. metallurgical coal production capacity will be 22 million tonnes in 1985. Assuming all mines share the available market equally, the B. C. industry would be running at only 59% of capacity. Mine production capability will greatly exceed available market during the forecast horizon.

The oversupply situation will result in poor prices. The 1983 price is forecast to be $70 per tonne FOB, or 16% below the 1982 price and below a long-term breakeven price for the industry. In real terms this price will remain about $70 in 1984 and

The oversupply situation will result in poor prices. The 1983 price is forecast to be $70 per tonne FOB, or 16% below the 1982 price and below a long-term breakeven price for the industry. In real terms this price will remain about $70 in 1984 and then increase in 1985/86 to a price judged to be sufficient to provide the surviving mines with an acceptable price, probably around the $80 per tonne range.

With the exception of the new Northeast mines scheduled to start production in late 1983, no other new coking coal mines are forecast to start-up in B. C. in the time frame of this study. Closures are a distinct possibility.

2.1.2 Thermal Coal

While B. C. mines have enjoyed some increase in thermal coal shipments since 1970, the increase has been minor compared to the growth in world trade. For example, Japan's thermal coal imports increased from 0.4 to 11.3 million tonnes between 1975 and 1981. During the same period, B. C.'s exports remained static at 0.5 to 0.6 million tonnes per year. The poor showing of B. C. thermal coals is due to their current cost and poor quality. The province has no selling advantage other than as an alternative supplier. South Africa's and Australia's exports, on the other hand, increased by 250% and 980% respectively during the same period. B. C. shippers in the 1970's had two main customers, Ontario Hydro and a Danish power utility company. From 1980 to 1982, some contracts were secured with South Korea. In 1983 B. C. contracts (domestic and foreign) total 2.9 million tonnes of which South Korea will account for 66%, Ontario Hydro 24%, and Western Europe 10%. There are no Japanese contracts with B. C. mines and only a small one with one Alberta shipper.

The production outlook is weak until 1987 when contracts with off-shore power plants are expected. In the meantime, the only thermal coal shipments will be those on long-term contracts, possibly at reduced prices. No new mines in the Northeast or the Southeast producing "mountain" type thermal coals are forecast. Late in the decade three new mines, Quinsam, Telkwa, and Wolf Mountain are expected to come on stream. These are high quality thermal coals located near the coast with easy access to transportation and services infrastructure.

2.2 Metal Mining

2.2.1 Copper

Of the total 268.6 thousand tonnes of B. C. copper production in 1982, approximately 99% were primary product. Currently there are thirteen copper mines in the province. In addition, small quantities of by-product copper are produced at three lead/zinc mines. Almost 70% of all the provincial production is accounted for by four mines: Lornex, Island Copper, Gibraltar and Bethlehem/Valley Copper. The revenues of these mines are fairly good and they should continue to dominate copper production in the province. In fact, one of the four, Bethlehem/Valley Copper, is expected to expand significantly to about 95,000 tonnes per year. This will make it the largest copper producer in B. C. Table 18 shows that in the long-run, the real value of copper production is estimated to grow at 5.0% per year while the volume of production should maintain an annual rate of 3.3%. These growth rates compare well with the metallurgical coal growth estimates. In the short-term, copper prices are forecasted to fluctuate until 1985 when the market should firm-up and the value of production should increase 45% over the previous year. This estimate is based on a value of CND $1.82/kg. in 1982, increasing to the CND $2.40/kg level after 1985. Mining in general and copper in particular will probably then experience a decline in demand as the economy enters another business cycle downturn.

2.2.2 Molybdenum

Production of molybdenum has been curtailed significantly as a result of very depressed markets. The three primary molybdenum producers, Endako, Boss Mountain and Kitsault, are currently closed for indefinite periods. It is interesting to note that about 70% of the molybdenum production in 1982 was by-product to copper production. The forecast allocates a somewhat lower by-product percentage, as we expect two new mines to be in production towards the end of the period and because we assume more typical production levels as the market improves after 1984. The assumed ratio is 55% primary production with the remaining 45% coming as by-product from copper.

The price forecast calls for a modest recovery in 1984, accelerating in 1985 when total volume of production should improve 90% over the previous year as a result of depleted world inventories. In the long-term, in response to an average economic growth of around 3.0% per year in North America, production is forecast to grow at 1.1% per year while the value of molybdenum shipments is expected to increase at a 2.5% annual rate from 1988 to 2002.

2.2.3 Lead/Zinc

Production of lead/zinc concentrates in B. C. is dominated by two mines, of which Cominco's Sullivan mine has the largest output with nearly 95% of the lead production and about 80% of the zinc production. The other important operation is Westmin Resources Limited with two mines near Campbell River in Vancouver Island. Westmin is planning to consolidate these two properties by the end of 1984, and their combined increased production should then reduce Sullivan mine's share of zinc output to about 65% of the provincial total. By 1990, two new lead/zinc mines could start operations, those being Big Missouri/British Silbak complex in the vicinity of Stewart, and the Cirque deposit in northern B. C. The Cirque mine will be a significant producer and will greatly influence the decision to invest on a second lead/zinc smelter. It is estimated that up to 20% of the new zinc will be by-product to copper production.

A significant factor in the production of lead/zinc is the price of the by-products, i.e. silver, gold and copper. Consequently, our estimates, although relatively flat in the short-run, show a strong growth in the 1988 to 2002 period following the price forecast of the three main metals. Lead, however, is forecasted to have a very bumpy recovery with an annual production increase of only 1.1% in the long-run and 4.2% per year in real value. The basic reason for this forecast is that lead is becoming a single end-use material. Approximately 60% of total consumption is in lead batteries so lead is directly tied to the future of the automobile industry. Two other traditionally important applications, lead paints and gasoline additives, are under pressure because of problems with lead toxicity, and are likely to experience shrinking markets. Zinc, on the other hand, should attain long-term annual production and value growth rates of 5.0 and 7.5% respectively. The main market for zinc is the U.S. which accounts for about 11% of the western world market, of which 65% is met by imports.

2.2.4 Gold/Silver

Significant quantities of new silver and gold production are forecast. Gold in particular, should enjoy good price and production volume increases. The long-term estimates as illustrated in Table 18, indicate a 4.4% annual rate of growth in production and an average of 6.6% per year in value, quite comparable to thermal coal and zinc value increases. Due to low prices, silver production on the other hand, is anticipated to have a negative growth for most of the near-term, i.e. 1985 to 1987. Silver prices in the long-run should recuperate to a real 4.0% average increase while production should continue to increase at an estimated 1.0% per year.

Currently, there are five mines producing exclusively gold and/or silver. However, twelve copper mines and six lead/zinc mines also produce significant quantities of gold and/or silver. Consequently, the amounts of primary gold and silver are small, accounting for only 37% and 32% of the province's production respectively. Most of B. C.'s silver production is by-product to copper mines with 59% coming from this source in 1982. In the case of gold, 52% was by-product to copper production and 11% from lead/zinc mines.

Two mines, Sam Goosly and Sullivan, accounted for 72% of the total silver production. Both of these mines have good reserves and will continue to dominate silver production. The production of gold is less concentrated than that of silver. In 1982 about 55% of the production was accounted for by five producers, the largest being Island Copper with 20% of the total.

2.3 Smelting Activity

The value of smelter production in 1982 shows that copper ranks as the most important metal in B. C., with revenues estimated at $465 million. The second most important metal is aluminum, for which ingot shipments amounted to $300 million. Silver production valued at $183 million, was followed by zinc at $127 million, gold at $119, molybdenum at $131 and lead with $76 million.

2.3.1 Lead/Zinc Smelters

Cominco's Trail smelter will continue to operate throughout the forecast period. The company has embarked on a major modernization program which will not only assure a long life but also increased output.

There is an excellent chance that by 1995 a second lead/zinc smelter will be built in the province. The required concentrates will be available from mines in the Yukon and/or the Cirque property. The other major ingredient, electrical energy, could be made available and the long-term market outlook for zinc is judged healthy.

2.3.2 Copper Smelters

The Afton smelter is a specialty operation only able to handle the unique Afton ore. Once this ore is exhausted, the smelter will have to close or undergo major changes to enable it to handle normal B. C. concentrates. The forecast therefore, shows the Afton smelter as being tentative after 1987 when the existing suitable ore is exhausted.

Sufficient concentrates exist to support a world scale copper smelter in B. C. Pressures are building to process concentrates before export. The forecast assumes therefore that a smelter is built in the 1990 to 1995 period.

2.3.3 Aluminum Smelters

Alcan has announced its intention to construct more capacity in B. C. The timing, number, and size of these plants will depend on the outcome of Alcan's Kemano 2 project. It is assumed this will be resolved and Alcan will construct two new aluminum smelters with a capacity each of 175,000 tonnes per year. The start-up dates are based on estimates of how long planning, permitting and construction would take. The estimates include the first of these new smelters in 1990 and the second in 1995.

In addition, a fourth smelter is shown as starting in the year 2002. This is simply included to demonstrate that the long-term outlook for aluminum is bright.

2.3.4 Molybdenum Roasting

Placer has been successful in marketing molybdic oxide from its roaster at Endako. This forecast assumes a second roaster will be built by another producer probably in the Highland Valley. This will not likely be done before molybdenum markets strengthen appreciably, probably towards the end of the 1980's. Start-up in 1990 is assumed.

2.3.5 Other

The only other smelting operation likely to be built during the forecast period is a ferrosilicon plant. Once such a plant exists, the production of silicon and magnesium metals are possibilities. Silicon manufacture utilizes the same equipment. One of the two metals used in producing magnesium metal is ferrosilicon. However, neither silicon nor magnesium production is assumed to occur in the forecast period.

The reasons ferrosilicon can be considered for B. C. is that its manufacture requires a large quantity of electricity (electric furnaces are employed) and the Japanese steel industry would be the major customer. The Japanese have decided to import more of their ferrosilicon needs because of power shortages and costs.

Over the last five years, several different Japanese groups have examined ferrosilicon/silicon/magnesium manufacture in B. C. The most advanced of these investigations appears to be the Mitsui/Cominco joint venture, their proposed location being Kimberly. The current depressed markets for steel have reduced Japanese interest. However, it is believed the long-term factors favouring ferrosilicon production in B. C. still apply and a plant will be built eventually. It is estimated that this investment will occur in the 1990 to 1995 period.

3. TOURISM

Tourism continues to be one of the most important service industries, not only in terms of its direct contribution to the provincial employment, investment and purchases of retail and transportation services, but also because of its potential growth and its significant regional economic impact.

The tourism forecast has been prepared based on the following assumptions:

- Tourism includes all the activities of a visitor or tourist. The latter is defined as any individual who travels away from his/her normal place of residence for any purpose and stays a minimum of one night away from home. Business and pleasure trips are included as well as accommodation expenditures in hotels, motels, trailer parks and campgrounds.

- Current statistical information on the tourism sector of B. C. is not comparable to that of the other sectors of the economy. In our projections, therefore, we use only total revenue by tourist category rather than the direct contribution to GDP as measured by the provincial economic accounts.

- The financial cooperation between the federal and provincial governments to upgrade and develop facilities is assumed to continue. It is also assumed that the provincial government will endorse a tourism policy and support the inplementation of a tourism development plan.

- The spectacular natural resources of B. C., its open spaces and low population density combine to provide a favourable destination to international travellers.

- The real revenue generating "tourist services" are sales of "package tours" to non-residents. It is assumed that provincial tourism plant will be upgraded to international standards since this is a prerequisite for the sale of package tours. It is further assumed that the industry will be successful in changing people's attitudes towards tourists and that marketing policies will be more price competitive vis a vis other tourist regions of North America and the Pacific.

Figure 19
B.C. TOURISM SECTOR
REVENUE PROJECTIONS

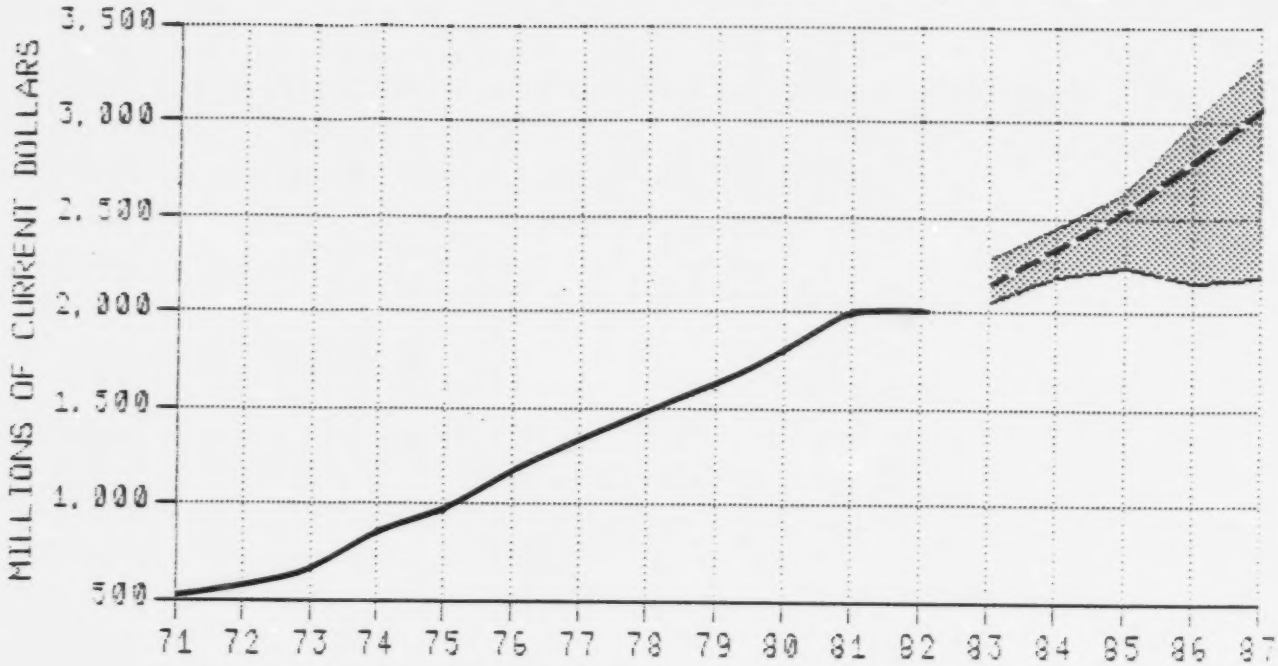

Table 19

TOURISM[1] SECTOR IN B. C.
PROJECTIONS OF REVENUE[2]
Average Annual Percentage Change

Spending Group	1971-81	1981 Actual Revenue $ (Millions)	1982	1983	1984	1985	1986	1987	1988/2002
B. C. Residents	15.3	950	-6.1	5.5	7.0	8.0	12.0	12.0	6.6
Non-Residents									
- U.S.	3.3	355	-8.6	11.0	11.0	11.0	12.0	12.0	7.5
- Canadians	20.0	560	-10.0	6.0	10.0	14.0	14.0	14.0	9.2
- Overseas	58.0	155	-3.4	9.0	15.0	20.0	22.0	22.0	15.4
Total	13.4	2,020	-4.8	8.5	10.0	12.0	14.0	14.0	8.5

Source: Ministry of Tourism B. C. "The Tourism Marketing Plan 82-86".
Ministry of Industry and Small Business Development "B. C. Facts And Statistics.
Department of Recreation & Travel Industry. "B. C. Tourism Fact Book".

[1] Tourism Industry. Within the context of this report, the following investment categories and activities are included. Hotels and motels; camping grounds and RV parks; restaurants and taverns; travel agents and tour services, information centres. In addition, many transportation services, gas stations, photographic services and retail stores are heavily dependent on sales to out-of-town tourists.

[2] Measured in current, i.e. inflated, dollars and including the following expense categories: transportation 24%, restaurants 23%, accommodation 20%, shopping 16%, recreation 9% and groceries 8%.

Figure 19 illustrates the revenue forecast of the central case plus the range of the forecast, while Table 19 presents the estimated growth of the sector on a year to year basis to 1987 and on an average compounded rate for the 1988 to 2002 period. A ten year historical perspective is also shown in Figure 19 and Table 19. The most significant aspect of the past performance of tourism has been its rapid and consistent pattern of growth. This pattern is typical of a new industry and reflects in part the initial low economic base of tourism in B. C. during the early 1970's. The forecast anticipates several more years of excellent growth, marking a return to the economic levels attained prior to the recession as well as the special impetus that Expo'86 represents to tourism investment in B. C.

The current marketing plan of the Ministry of Tourism calls for a very ambitious target growth for the 1983 to 1986 period. The forecast included in Table 19 has a lower growth rate for the initial years, but by 1986 a higher growth target is anticipated due to the larger sectoral investment spurred by Expo 86. In addition, the Federal Government's expenditures on Canada Place, and the continuation of the B. C. Place development by the provincial and local governments and the private sector, should help to set the stage for further growth of tourism after Expo'86 as shown in Table 19. The forecast assumes that expenditures from B. C. residents will become relatively less important as B. C. becomes more and more the destination point of international tourists and as the overnight stays are extended to longer trip duration and larger travelling parties. It is estimated that by 1986 only 41.0% of total tourism revenues will originate from local residents, down from 47% in 1981. Overseas visitors should increase from about 8% of total revenues in 1982 to nearly 12% in 1986, while residents from the rest of Canada will increase their total share of expenditures from 12% to 31%. This trend is assumed to continue throughout the forecast period.

As indicated in previous sections of this report, the economic activity of British Columbia is forecast to grow at below the historical rate in the 1987 to 2002 period. Similarly, the forest sector will face some raw material limitations around 1995. The tourism sector, on the other hand is expected to outpace the average annual growth rate of the economy as a whole with a 4.8% versus a 1.5% for forestry and 3.5% for the province. Some important factors contributing to this estimate are the greater organization of tourism as an industry, the continuation of government support, the uniqueness of B. C.'s location and its natural beauty,

estimate are the greater organization of tourism as an industry, the continuation of government support, the uniqueness of B. C.'s location and its natural beauty, the organization of international events centered around Expo 86, Canada Place and B. C. Place, the continuous improvement in the transportation network and tourism plant and the generalized offer of package tours to international travellers.

4. RETAIL TRADE

This section is largely based on the report on the Commercial Sector prepared for B. C. Hydro by the consulting firm of Currie, Coopers and Lybrand Ltd.[1] For the purpose of this study, Retail Trade, includes the activities of the following establishments:

- Department stores;
- Chain stores and independent retail merchants; and
- Auto related retailers such as car dealers and service stations.

The office-based industries and accomodation and food service industry as well as warehousing and wholesale are not included in the analysis.

The key assumptions supporting this forecast are:

- The main driving force of the sector is the economic and population growth of the province.

- Physically the retail industry will continue to occupy shopping centres, plazas and malls and retail store space along downtown streets and suburban strips.

- The decline in market share that independent retailers experienced over the mid-sixties, as department stores continuously expanded their shopping centres, is now being replaced by a gradual increase in market share.

- The independents have been and will remain the largest component of the retail industry, accounting for about 55% of total sales.

- Sales volume per square foot will rise over time so that space requirements will grow less than retail sales.

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[1] "The Commercial Sector in B. C., Its Growth and Space Requirements to 2002" prepared by Currie, Coopers and Lybrand Ltd. April 19, 1983.

As shown in Table 16, the long-term growth forecast for the retail sector is 3.5% per year, a rate similar to the forecast for the average annual provincial economic growth over the 1987 to 2002 period. Anticipating an important flow of investment in preparation for Expo'86 and its success as a tourist attraction, the short-term forecast for retail trade includes growth rates of 5.9%, 8.7% and 8.8% for the years 1984 to 1986 respectively. Although the overall growth of the sector is forecast to grow at below historical rates as shown in Table 16, its contribution to provincial GDP, will actually increase from 13.5% in 1982 to 14.1% by 2002.

Some important factors affecting the future development of retail trade in B. C. are the acceleration of influences that have already shaped its performance. The composition of total consumer spending, for instance, has been changing and the share of consumer expenditures on "retail-store" types of goods has gradually declined. A growing share is being spent on housing, fuel, health care, travel and education. In the past decade, in current dollar terms, "non-retail" types of expenditures have grown by over 200%, while retail sales have grown by only 150%.

This trend reflects a changing consumption pattern due in part to changing demographics as the bulk of the population moves from the teens and early twenties towards middle age. Spending on housing and health care is on the increase, while less is being spent on food and clothing. This trend is also accentuated by the faster rise in the costs of housing and fuel taking a larger portion of disposable income. In addition, during the last decade taxes as a whole also rose significantly, thus reducing the money available for retail expenditures. This trend will likely continue as the population grows older. Thus, a slowdown in the overall growth of the total retail market will likely occur, as the aging population spends a growing share of its money on "non-retail" items.

As indicated above the anticipated slower economic growth and changes in the consumption pattern will reduce the long-term growth of retailing. In the near-term the current recession has cut deeply into consumer spending, especially expenditures on durable goods, and total retail sales are not likely to regain significant momentum before 1984. Appliance and furniture sales are slow. Because the department stores are the anchors of shopping centres, this in turn implies that shopping centre development will be curtailed further, reinforcing the recent trend.

A more general impact, particularly in the long-run, will be the increasing use of computers. An important application will be on improving inventory control. This will generally mean less merchandise on the floor and hence less space per unit sales. But the impact is not expected to be dramatic. Some increase in productivity may be forthcoming with increasing computerization of the actual retailing process. The most important aspect of retailing will remain in the manner and method of displaying merchandise, and this is not perceived to be affected by electronic technology. The main impact will be to reinforce space reduction through inventory control.

During the forecast period, the basic dominance of the service sectors within the financial economy will not be altered. On the contrary, it is estimated that retail, tourism and financial services may capture a larger share of the total, and that within retail the trend will be for a higher dependence on smaller labour - intensive outlets. The revival of interest in the downtown core, the increasing "unstructuring" of the market place, and the slowdown in new shopping centers are some of the indicators that point towards these developments.

VII. ENERGY PRICES[1]

The following forecasts of the average selling prices for energy within B. C. Hydro service areas are based on recent work coordinated for B. C. Hydro by Monenco Ltd. and Confer Consulting Ltd. More detail is available in the report "B. C. Hydro Projections of Gross Load Requirements, 1983/84:2003/04."

A summary of the various estimates is presented in Table 20 and Figure 20, showing expected international and domestic crude oil price, average B. C. Hydro natural gas price and average B. C. Hydro domestic electricity prices. Table 21 presents detailed Vancouver based petroleum product prices.

The prices shown in Table 20 and Figure 20 are average selling prices and do not represent the prices energy consumers will pay for a given electricity or gas service or an oil product.

1. ELECTRICITY PRICES

B. C. Hydro's future electricity prices are a function of sunk costs in existing facilities, the anticipated load growth, the costs of new facilities to meet the load growth, the cost of financing these facilities, future operating costs, net export revenues, the interest coverage achieved over the forecast period and the level of taxes imposed on electricity sales.

The trend in future electricity prices was calculated using B. C. Hydro's Corporate Financial Model (CFM). The analysis started with the existing and committed costs and incorporated projections of capital and operating costs. Whereas operating costs are charged through to the customer each year as incurred, the costs of capital facilities are recovered in the form of interest and depreciation over the

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[1] It should be noted that while this report was finalized in June 1983, the basic energy pricing assumptions in this report are within the guidelines provided by the recent (July 1, 1983) agreement between the governments of Canada and Alberta, amending the previous September 1, 1981 agreement on Energy Pricing and Taxation.

lives of the facilities. For a given load forecast and system plan, the financial model calculates the costs of production for each year of the forecast period and then the percentage changes in rates from one year to the next so that annual revenues equal annual costs.

Major assumptions included in the base case are:

- B. C. Hydro reaches an interest coverage of 1.3 by 1987/88;
- Water taxes are levied as per the present legislation, i.e. there is a step increase in taxes in 1984 and the tax is indexed thereafter;
- The composite cost of new debt is 10.5%;
- The Canadian dollar increases gradually from the present level of 81.5¢ U.S. and averages 84.0¢ U.S. over the forecast period;
- There are modest export sales averaging $60 million per year in 1982 dollars; and
- All costs escalate at 5.5% per annum over the twenty year period.

Sensitivity studies were also performed for a range of interest and load growth rates.

In all the scenarios, the rates will have to increase as B. C. Hydro simultaneously works towards 1.3 interest coverage and as customers have to bear the cost of major projects such as the Revelstoke project coming into service. The variation to higher or lower inflation is important because a large part of B. C. Hydro's costs are fixed in nominal terms in much the same way that a 20-year house mortgage is fixed.

The resulting central electricity price forecast is shown in Table 20 and Figure 20. Real average electricity price increases of 3% per year are expected between 1983 and 1988, after which they are expected to keep pace with general inflation. No attempt has been made to forecast year to year variations over the long-term and only anticipated general trends are provided.

The actual configuration of the rate increases will be the subject of a series of hearings before the British Columbia Utilities Commission. It is not the purpose of this exercise to attempt to anticipate how those rate increases will take place. Moreover, for particular residential, general or bulk industrial category customers, the price increase pattern could vary somewhat.

2. OIL AND PETROLEUM PRODUCT PRICES

Future oil prices in British Columbia will be a function of world crude oil price trends and Federal and Provincial government pricing and taxation policies.

2.1 World Crude Oil Prices

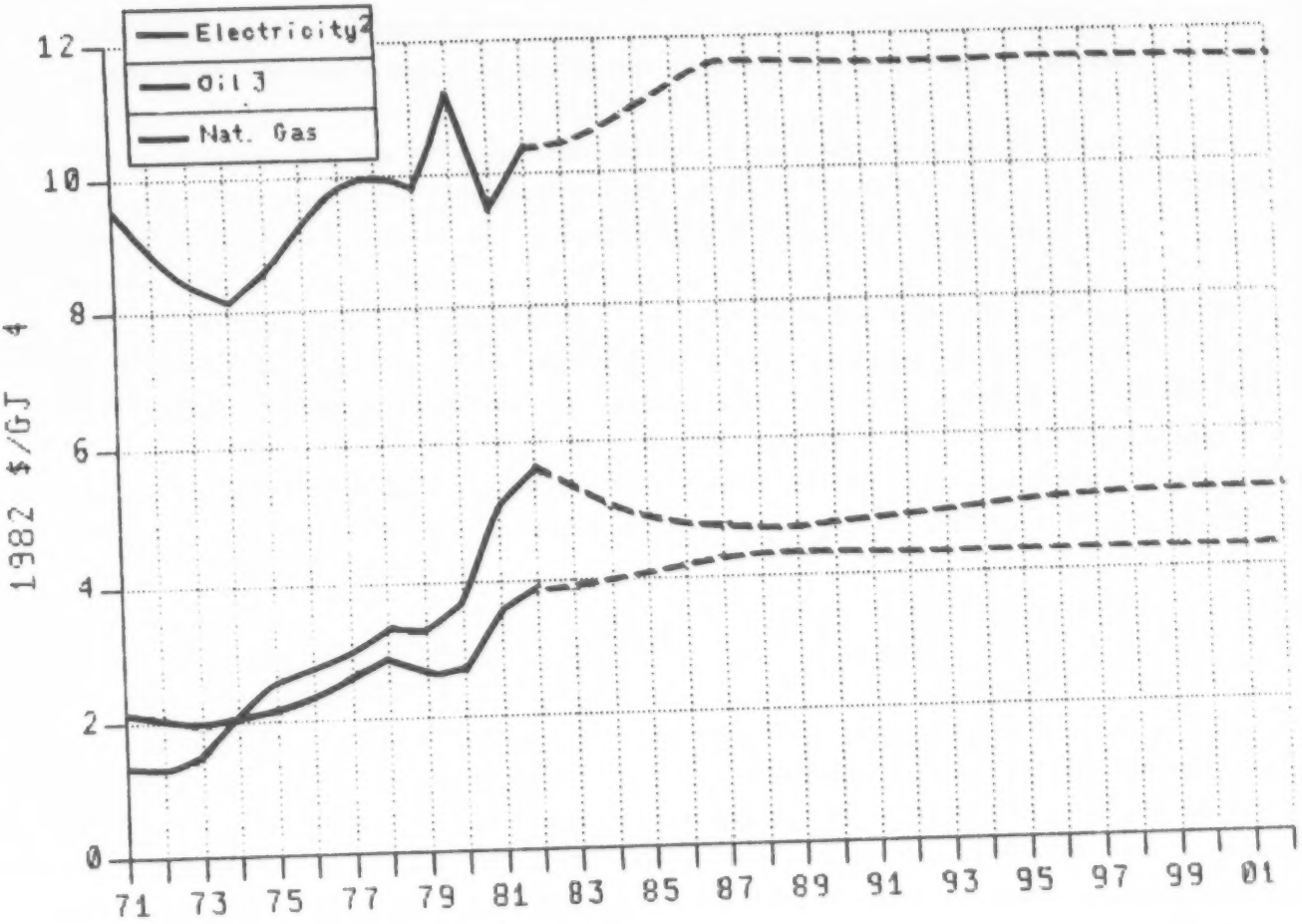
The prolonged slowdown in world economic activity and major structural changes in energy consumption caused world crude oil prices to soften during 1982. World crude oil demand outside the centrally planned economies, which are largely self-sufficient, peaked at 7.8 cubic meters per day (m^3/d) in 1979 and dropped to about 7.1 million m^3/d in 1982. During the same period, crude oil production from non-OPEC sources continued to rise, and inventory drawdown increased substantially in 1982. OPEC crude oil production fell from 4.9 million m^3/d in 1979 to 2.9 million m^3/d in 1982.

The surplus of crude oil supply capacity caused many producing countries to decrease crude oil prices to maintain adequate levels of production and revenue. The downward pressure on crude oil prices caused a reduction in the official price of crude oil from OPEC members during the first quarter of 1983. At the same time, an agreement on production quotas among OPEC members was also reached. Except for Saudi Arabia, current production quotas for the remaining OPEC members are 2 million m^3/d which is very similar to their actual production of 1.9 million m^3/d in 1982. Saudi Arabia, which produced an average of about 1 million m^3/d in 1982, has undertaken to be the swing OPEC producer and will meet the demand for OPEC crude in excess of 2 million m^3/d up to 12.8 million m^3/d.

Future world crude oil prices are subject to considerable debate. For B. C. Hydro's base case projection shown in Table 20, it is assumed that some continued softness in the world market causes a modest drop in Saudi Arabian marker crude oil price in 1984. Thereafter, real price increases of zero to 1 percent are projected over U.S. inflation which is expected to average about 5 percent per year.

Saudi Arabian marker crude oil price in constant 1982 dollars is forecast to average U.S. $27.88/bbl in 1983 and U.S. $25.69/bbl for 1984 before rising to U.S. $26.06 in 1990. The Saudi marker price is adjusted for quality and transporation

Figure 20[1]
B.C. RELATIVE ENERGY PRICE TRENDS



Footnotes:

1. Prices quoted have not been corrected for end-use efficiencies.
2. Prices shown are average selling prices for gas and electricity and do not represent the prices energy consumers will pay. Cost of refining, distribution or sales taxes are not included in oil price.
3. Crude oil average price for Canada 1971-81: blended Vancouver crude price 1983-2002.
4. Conversion Factors: Electricity 277.8 kWh = 1 GJ
   Oil 0.1634 bbl = 1 GJ
   Natural Gas 26.7 m3 = 1 GJ

charges to derive an average price of imported crude oil landed in Montreal. This price forms the basis for calculating the Canadian blended crude oil price.

Table 20 gives the world crude Saudi marker price, the Canadian oil imports price landed in Montreal, the Vancouver blended crude oil price as well as the relative price increases of natural gas, electricity and coal in the B. C. market.

The econometric models of the Canadian economy were simulated with three different U.S. world oil prices. In addition to the base case described above, the statistical summary includes a high scenario that assumed a price of U.S. $30.00/bbl increasing by 1% real to 1987 and at a 2% real thereafter, and a low price scenario that included an initial price of U.S. $15.00/bbl with increases equal to the U.S. rate of inflation to the end of the decade and a marginal price rise of 0.5% real thereafter.

2.2 Vancouver Blended Crude Oil Price

The Vancouver crude oil price reflects the world crude oil price and Canadian pricing policies. The relatively low world crude oil prices during the initial years of the forecast period cause the current price for old Canadian crude oil of CND $29.50/bbl to exceed 75% of the world crude oil price ceiling set out in the 1981 National Energy Program. The base case B. C. Hydro forecast does not roll back the old oil price to achieve the 75% ratio; rather, the old oil price is held at the current level until world oil prices rise enough to re-establish the 75% ratio and then the old oil price rises accordingly. Using this assumption, the Vancouver blended crude oil price is the sum of:

- the current wellhead price of old oil;
- the pipeline tariffs to Vancouver;
- the Petroleum Compensation Charge (PCC) which provides funds to pay for new or imported crude oil at prices above the old oil price;
- a Canadian Ownership Special Charge (COSC) which is assumed to be extended indefinitely as proposed in the Federal Budget of 19 April, 1983.

Table 20

B. C. RELATIVE ENERGY PRICE TRENDS[1]
(constant 1982 dollars)

Year	World Crude S. Arabia Marker	Canadian Oil Imports Montreal	Vancouver Blended Crude Oil		Average BCH Natural Gas Price	Average BCH Electricity Price		Thermal Coal[2]					
								Fob Roberts Bank		Mine Site			
										N.E.		S.E.	
	US$/bbl	CND$/bbl	$/bbl	$/GJ	$/GJ	¢/KW.h	$/GJ	$/Tonne	$/GJ	$/Tonne	$/GJ	$/Tonne	$/GJ
1982	34.00	41.60	34.21	5.59	3.85	3.75	10.42	63.83	2.55	37.23	1.49	38.30	1.53
1983	27.88	33.65	32.93	5.38	3.85	3.75	10.42	47.00	1.88	27.00	1.08	28.00	1.12
1984	25.69	30.46	30.65	5.01	3.97	3.86	10.72	47.00	1.88	27.00	1.08	28.00	1.22
1985	25.69	30.69	30.20	4.93	4.08	3.98	11.06	47.00	1.88	27.00	1.08	28.00	1.12
1986	25.69	29.70	29.11	4.76	4.20	4.09	11.36	52.00	2.08	30.00	1.20	31.00	1.24
1987	25.69	29.87	29.07	4.75	4.31	4.20	11.67	81.00	2.44	36.00	1.44	37.00	1.48
1988/92[3]	26.57	29.78	29.68	4.85	4.31	4.20	11.67	68.00	2.72	40.00	1.60	40.00	1.60
1992/2002[3]	29.31	31.20	31.43	5.14	4.31	4.20	11.67	84.00	3.36	55.00	2.20	56.00	2.24

[1] Conversion Factors: Electricity 277.8 kW.h = 1 GJ
Crude Oil 0.1634 barrel = 1 GJ
Coal 0.040 tonnes = 1 GJ

[2] Based on Table 21 "Forecast of B. C. Thermal Coal Production", H. N. Halvorson Consultant Limited.

[3] Values shown for 1988-92 and 1992-2002 are for the last year of the period shown.

The resulting blended Vancouver crude oil price as shown in Table 20, drops to CND $32.93/bbl in 1983 and remains fairly stable to 1990 and then rises modestly as world crude oil prices rise, reaching CND $31.43/bbl in 2002.

2.3 B. C. Petroleum Product Prices

Starting with the Vancouver blended crude oil price, a price forecast of crude oil products and other competitive fuels was derived. The estimates, in dollars per litre and gigajoule are presented in Table 21 on a year to year basis from 1983 to 1987 and as annual average for 1992 and the year 2002. Except for heavy fuel oil, for each crude oil product (e.g. residential fuel oil, gasoline, etc.) the cost of crude oil, refining, distribution and any taxes are summed to get the consumer product price. Sales and excise taxes and refining and distribution margins are held constant in real terms. Generally, the crude oil product prices remain constant in real terms to 1990 and then increase modestly in real terms thereafter. This follows the crude oil price pattern but is dampened due to the addition of taxes and industry margins.

For heavy fuel oil, which is traded internationally, the price is established by a ratio with crude oil prices. Heavy fuel oil prices are set so that they will clear the markets at all times and therefore eliminate any supply/demand imbalances. This has resulted in heavy fuel oil prices in the order of 70% of light and medium crude oil prices. For forecasting purposes the low sulphur heavy fuel oil price is set at 72% of the value of international crude oil in Montreal, and at 66% of that crude oil value for high sulphur content. This results in real heavy fuel oil prices following crude oil prices and remaining relatively constant in real terms until 1990 and increasing at 1% per year thereafter.

In addition to crude oil product prices, the prices of three other fuels which compete with crude oil products are forecast in Table 21. Propane prices are linked to commercial light fuel oil prices, butane prices to gasoline and light fuel oil prices and CNG prices are derived from natural gas prices.

Table 21

B. C. PETROLEUM PRODUCT PRICES[1/2/3]

Year	Residential Light Fuel Oil		Heavy Fuel Oil				CNG
			High Sulphur		Low Sulphur		
	$/L	$/GJ	$/L	$/GJ	$/L	$/GJ	$/GJ
1982	0.30	7.75	0.14	3.76	0.15	4.00	6.70
1983	0.29	7.49	0.12	3.22	0.13	3.46	6.54
1984	0.27	6.97	0.10	2.68	0.11	2.93	6.63
1985	0.27	6.97	0.10	2.68	0.11	2.93	6.76
1986	0.27	6.97	0.10	2.68	0.11	2.93	6.86
1987	0.27	6.97	0.10	2.68	0.11	2.93	7.00
1988/92[4]	0.28	7.23	0.11	2.95	0.12	3.20	7.00
1992/2002[4]	0.28	7.23	0.12	3.22	0.13	3.46	7.00

Year	Gasoline		Diesel Fuel		Propane	Butane
	$/L	$/GJ	$/L	$/GJ	$/GJ	$/GJ
1982	0.43	12.39	0.40	10.34	4.38	4.83
1983	0.42	12.10	0.39	10.08	4.00	4.44
1984	0.40	11.52	0.35	9.05	3.56	3.95
1985	0.40	11.52	0.35	9.05	3.46	3.84
1986	0.39	11.24	0.34	8.79	3.27	3.62
1987	0.39	11.24	0.34	8.79	3.20	3.56
1988/92[4]	0.40	11.52	0.35	9.05	3.35	3.72
1992/2002[4]	0.41	11.81	0.37	9.56	3.68	4.09

[1] Constant 1982 Canadian Dollars.

[2] No corrections have been made for end use efficiencies.

[3] Numbers may vary slightly due to rounding.

[4] Values are for the last year of the period shown.

3. NATURAL GAS PRICES

Natural gas prices are a function of production and transmission costs and government policies, which determine the level of taxes.

At present, gas prices in B. C. are based on the B. C. Utilities Commission pricing method which bases the production or field price on a given net back to producers. The B. C. Hydro selling price is the sum of:

- B. C. wholesale natural gas price;
- B. C. Hydro cost of service;
- B. C. Hydro system losses;
- a Natural Gas and Gas Liquids Tax (NGGLT);
- a Canadian Ownership Special Charge (COSC); and
- a municipal/sales tax (if applicable).

The only link with oil prices is the level of the NGGLT tax levied by the Federal Government.

In April 1983, the B. C. Ministry of Energy Mines and Petroleum Resources (MEMPR) published a Technical Report on natural gas supply to Vancouver Island. In this report, the B. C. wholesale pricing mechanism was changed to become directly linked to crude oil prices. Specifically, the report set the B. C. wholesale price equal to the Alberta Border Price (ABP) in 1986, and then increased the wholesale price to achieve a heat parity ratio of 65% of the Vancouver blended crude oil price in 1990 and thereafter. This pricing mechanism establishes a direct link between natural gas and crude oil prices, and is similar to the Eastern Canadian natural gas pricing method.

In the case of the BCUC pricing method, the B. C. Hydro average selling price in 1992 would be lower in real terms than the 1982 value, and then rise in real terms between 1992 and 2000. The Vancouver 65 pricing method results in a real price rise of some 17% between 1983 and 1992 and a further 3.8% per year between 1992 and 2002. As discussed in the two previous sections, electricity prices in real terms would be 12% higher in 1992 than in 1982 and crude oil product prices would have no real increase over the same period.

The B. C. government has not made an official policy statement regarding Vancouver 65 natural gas pricing but does have a long standing policy to ensure that natural gas is encouraged as the preferred fuel.

For long-term load forecast purposes, it is assumed that the B. C. government's policy to encourage natural gas use will remain. To be consistent with the policy to encourage higher use of gas, the load forecast increases Hydro's average natural gas selling price at the same rate as the Hydro average electricity selling price. This results in a 12 percent increase in real natural gas prices during the forecast period, as shown in Table 20.

Table 22

WORLD CRUDE OIL PRICE FORECAST
U.S. $/bbl

Year	LOW		CENTRAL		HIGH	
	Current	1982 $	Current	1982 $	Current	1982 $
1982	34.00	34.0	34.00	34.00	34.00	34.00
1983	15.00	14.14	29.00	27.88	30.00	28.85
1984	15.70	14.40	28.00	25.69	35.00	32.11
1985	16.60	14.40	29.54	25.69	37.28	32.42
1986	17.50	14.40	31.08	25.69	39.59	32.72
1987	18.20	14.40	32.47	25.69	42.16	33.37
1988	19.20	14.40	34.26	25.76	45.11	34.04
1989	20.10	14.40	36.14	25.81	48.27	34.72
1990	21.20	14.40	38.31	26.06	51.65	35.42
1991	22.40	14.50	40.61	26.37	55.26	36.12
1992	23.60	14.50	43.05	26.57	59.13	36.85
1993	24.90	14.60	45.63	26.84	63.27	37.58
1994	26.30	14.80	48.37	27.17	67.70	38.34
1995	27.70	14.80	51.27	27.42	72.44	39.10
1996	29.20	14.90	54.35	27.73	77.51	39.88
1997	30.80	14.90	57.61	27.97	89.93	40.68
1998	32.50	15.00	61.07	28.27	88.74	41.50
1999	34.30	15.10	64.73	28.52	94.95	42.33
2000	36.20	15.20	68.61	28.83	101.60	43.17
2001	38.20	15.30	72.73	29.09	108.71	44.04
2002	40.30	15.30	77.09	29.31	116.32	44.92

Note:

Numbers have been rounded up to the nearest tenth of a cent.

Table 23

U.S. MACRO FORECASTS

Year	Growth Real GNP	Inflation CPI	Housing Starts[1]	91-Day Treasury Bill Rate	10 Year AAA Cdn Prov Bonds	30 Year AAA Cdn Prov Bonds
	(% Change)	(% Change)	(Millions)	(%)	(%)	(%)
Low - Economic Decline						
1982	-1.7	6.2	1.1	10.9	14.0	15.0
1983	1.8	3.5	1.3	7.5	10.5	12.0
1984	4.0	5.0	1.5	8.5	12.0	13.0
1985	0	3.0	1.2	3.0	8.0	9.0
1986	-1.0	2.0	1.0	3.0	5.0	6.0
1987	3.0	2.0	1.2	4.5	5.5	6.0
1987-2002	2.5	3.5	1.4	5.0	6.0	6.5
Central - Restrained Recovery						
1982	-1.7	6.2	1.1	10.9	14.0	15.0
1983	2.8	3.5	1.6	7.5	11.0	12.0
1984	4.9	4.8	1.8	7.7	11.5	12.3
1985	4.4	5.5	2.0	8.0	11.5	12.0
1986	3.0	5.2	2.1	7.5	10.5	11.0
1987	1.5	4.5	1.8	7.5	10.0	10.5
1987-92	3.0	5.0	1.8	8.0	9.5	10.0
1992-2002	2.8	5.0	1.7	8.0	9.5	10.0
High - Approaching Potential Output						
1982	-1.7	6.2	1.1	10.9	14.0	15.0
1983	4.0	3.0	1.7	8.0	11.0	12.0
1984	6.0	4.0	2.1	10.0	11.0	12.0
1985	5.5	6.0	2.3	12.0	13.0	14.0
1986	4.0	8.0	2.2	14.0	14.0	15.0
1987	3.0	6.5	2.0	14.0	13.0	14.0
1987-2002	4.0	8.0	2.0	12.0	13.5	14.0

[1] Excluding mobile homes.

Table 24

CANADIAN LOW ECONOMIC GROWTH FORECAST

Economic Decline

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GNP (Billions of 1971 $)	128.1	130	133.9	132.6	128.6	131.2	148.4	189.9
REAL GNP (% Change)	-4.8	1.5	3.0	-1.0	-3.0	2.0	2.5	2.5
INFLATION								
(GNP Deflator - % Change)	10.7	6.5	3.5	2.5	2.0	2.0	4.5	4.5
(CPI - % Change)	10.8	6.0	4.0	3.0	2.5	2.5	4.0	4.0
UNEMPLOYMENT RATE (%)	11.1	13.0	13.0	15.0	16.0	12.0	10.0	10.0
HOUSING STARTS (Thousands)	126	165	175	120	100	120	155	155
INTEREST RATES								
FINANCE COMPANY PAPER (90 Day)	14.2	10.0	10.0	5.0	4.5	5.0	6.5	6.5
MYW-AAA-10 Provincial Bonds	15.4	12.5	13.0	9.5	6.0	6.5	7.5	7.5
EXCHANGE RATE (US¢/CAN$)	81.1	80.5	79.0	76.0	73.0	70.0	75.0	75.0

Table 25

CANADIAN CENTRAL ECONOMIC GROWTH FORECAST

Restrained Recovery

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GNP (Billions of 1971 $)	128.1	131.2	138.1	144.1	149.1	152.1	178.0[1]	239.2[1]
REAL GNP (% Change)	-4.8	2.4	5.3	4.3	3.5	2.0	3.2	3.0
INFLATION								
(GNP Deflator - % Change)	10.7	6.5	5.5	6.2	6.5	5.5	6.0	6.0
(CPI - % Change)	10.8	6.4	5.5	6.0	6.0	5.0	5.5	5.5
UNEMPLOYMENT RATE (%)	11.1	12.5	12.0	11.0	10.5	10.0	8.0	8.0
HOUSING STARTS (Thousands)	126	160	190	205	190	175	180	180
INTEREST RATES								
FINANCE COMPANY PAPER (90 Day)	14.2	9.0	9.5	10.0	10.0	9.0	8.5	8.5
MYW-AAA-10 Provincial Bonds	15.4	12.0	12.5	13.0	12.5	11.0	11.0	11.0
EXCHANGE RATE (US¢/CAN$)	81.1	81.5	82.0	82.5	83.0	83.5	84.0	84.0

[1] Value for the last year of the period shown.
[2] Excluding mobile homes.

Table 26

CANADIAN HIGH ECONOMIC GROWTH FORECAST

Approaching Potential Output

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GNP (Billions of 1971 $)	128.1	131.9	141.2	150.4	157.9	162.6	200.7	305.8
REAL GNP (% Change)	-4.8	3.0	7.0	6.5	5.0	3.0	4.3	4.3
INFLATION								
(GNP Deflator - % Change)	10.7	6.5	6.5	7.5	7.0	6.5	7.5	7.5
(CPI - % Change)	10.8	6.0	6.0	7.0	6.5	6.0	7.0	7.0
UNEMPLOYMENT RATE (%)	11.1	12.0	10.5	9.0	8.0	7.0	6.5	6.5
HOUSING STARTS (Thousands)	126	190	235	240	220	210	210	210
INTEREST RATES								
FINANCE COMPANY PAPER (90 Day)	14.2	9.0	10.0	12.0	14.0	13.0	12.0	12.0
MYW-AAA-10 Provincial Bonds	15.4	12.0	12.5	14.0	15.0	14.0	14.0	14.0
EXCHANGE RATE (US¢/CAN$)	81.1	81.0	80.5	80.0	79.5	79.0	79.0	79.0

Table 27

B. C. DEMOGRAPHIC ASSUMPTIONS

Year	L O W			C E N T R A L			H I G H		
	Net International Migration	Net Interprov. Migration	Total Net Migration	Net International Migration	Net Interprov. Migration	Total Net Migration	Net International Migration	Net Interprov. Migration	Total Net Migration
1983	7,000	2,240	9,240	8,000	3,000	11,000	9,000	4,420	13,420
1984	7,500	12,180	19,680	9,000	15,000	24,000	11,000	18,280	29,280
1985	8,500	17,420	25,920	10,500	20,000	30,500	13,000	24,210	37,210
1986	9,000	19,050	28,050	11,000	22,000	33,000	14,500	25,760	40,260
1987	9,500	20,250	29,750	11,500	23,500	35,000	15,500	26,500	42,000
1987-92	11,000	21,000	32,000	15,000	30,000	45,000	18,500	33,500	52,000
1992-2002	12,000	30,000	42,000	15,000	40,000	55,000	20,000	42,000	62,000

Fertility Assumption: It is assumed that there will be 1.74 births per woman in the child bearing age 15-49 years in 1983, rising to 1.85 by 1990 and declining thereafter to 1.76 by 2002.

Mortality Assumption: Mortality assumptions were made for nineteen different age cohorts broken down by sex. The numbers show a decline in mortality rates especially in the older age population groups.

Table 28

B. C. LOW ECONOMIC GROWTH FORECAST

Economic Decline

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GDP (Billions of 1971 $)	15.4[1]	15.5	15.9	15.5	14.9	15.4	17.4[2]	22.3[2]
REAL GDP (% Change)	-7.0[1]	0.5	2.5	-2.0	-4.0	3.0	2.5	2.5
INFLATION								
(GDP Deflator % Change)	10.5	6.5	5.0	3.5	2.0	2.0	5.0	5.0
(Vancouver - CPI % Change)	10.5	6.0	5.0	3.0	2.5	2.5	4.5	4.5
POPULATION								
(Thousands)	2,783	2,815	2,859	2,909	2,963	3,019	3,302[2]	3,884[2]
(% Change)	1.4	1.2	1.5	1.7	1.9	1.9	1.8	1.6
HOUSING STARTS (Thousands)	20	24	29	21	15	23	23[2]	23[2]
LABOUR FORCE (Thousands)	1,346	1,375	1,412	1,448	1,479	1,509	1,663[2]	2,058[2]
UNEMPLOYMENT RATE (%)	12.1	14.5	13.0	16.0	17.0	14.0	10.0	10.0

[1] Estimated.
[2] Value for the last year of the period shown.

Table 29

B. C. CENTRAL ECONOMIC GROWTH FORECAST

Restrained Recovery

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GDP (Billions of 1971 $)	15.4[1]	15.7	16.6	17.6	18.4	18.7	22.8[2]	32.2[2]
REAL GDP (% Change)	-7.0[1]	1.8	5.8	6.0	4.5	2.0	4.0	3.5
INFLATION								
(GDP Deflator % Change)	10.5	6.5	6.5	7.0	7.3	6.5	6.5	6.5
(Vancouver - CPI % Change)	10.5	6.2	6.0	6.5	6.5	5.5	6.0	6.0
POPULATION								
(Thousands)	2,783	2,817	2,865	2,920	2,979	3,040	3,376[2]	4,111[2]
(% Change)	1.4	1.2	1.7	1.9	2.0	2.0	2.1	2.0
HOUSING STARTS (Thousands)	20	26	33	35	31	26	33[2]	36[2]
LABOUR FORCE (Thousands)	1,346	1,377	1,416	1,456	1,490	1,522	1,706[2]	2,186[2]
UNEMPLOYMENT RATE (%)	12.1	13.5	12.5	11.5	11.0	10.5	9.0	7.5

[1] Estimated.
[2] Value for the last year of the period shown.

Table 30

B. C. HIGH ECONOMIC GROWTH FORECAST

Approaching Potential Output

	1982	1983	1984	1985	1986	1987	1987-92	1992-2002
REAL GDP (Billions of 1971 $)	15.4[1]	15.9	17.2	18.6	19.6	20.3	25.5[2]	40.4[2]
REAL GDP (% Change)	-7.0[1]	3.2	8.0	8.5	5.5	3.5	4.7	4.7
INFLATION								
(GDP Deflator % Change)	10.5	6.5	7.0	8.0	7.5	7.5	8.0	8.0
(Vancouver - CPI % Change)	10.5	6.0	6.5	7.5	7.0	7.0	7.5	7.5
POPULATION (Thousands)	2,783	2,819	2,872	2,935	3,001	3,070	3,445[2]	4,265[2]
(% Change)	1.4	1.3	1.9	2.2	2.3	2.3	2.3	2.2
HOUSING STARTS (Thousands)	20	30	37	38	34	30	45[2]	45[2]
LABOUR FORCE (Thousands)	1,346	1,379	1,420	1,463	1,501	1,537	1,741[2]	2,266[2]
UNEMPLOYMENT RATE (%)	12.1	12.5	10.5	9.0	8.0	7.5	6.0	6.0

[1] Estimated.
[2] Value for the last year of period shown.

Table 31

B. C. LOW SECTORAL GROWTH[1]

Economic Decline

	Average 1961-1980 Share of Economy	1982 Estimated Actual Value	Real % Change						
			1982	1983	1984	1985	1986	1987	87-2002
	%	$ Millions							
Agriculture[2]	1.6	208	2.5	1.0	2.0	2.5	1.0	1.0	1.5
Construction	7.2	1,055	-5.0	0.0	1.0	1.0	-5.0	3.0	1.5
Financial Services	12.3	1,608	-3.8	0.5	1.7	-2.0	-3.0	4.5	2.7
Forestry[2]	11.5	1,201	-16.0	2.0	8.0	-5.0	-7.5	4.0	2.0
Manufacturing	7.7	1,076	-5.5	0.0	2.0	0.0	-3.0	2.8	1.0
Mining[2]	5.0	455	-18.0	2.0	8.0	-3.0	-5.0	1.0	2.5
Retail Trade[3]	13.0	1,766	-11.0	0.5	3.9	-6.0	-8.0	2.5	3.0
Transportation	11.1	1,728	-6.0	-1.0	1.0	0.0	-1.0	2.0	2.6
Utilities	3.4	512	-3.8	1.0	1.5	2.0	0.0	1.0	1.0
Community Business & Personal Services	19.8	3,033	-5.8	0.5	1.5	-2.0	-3.5	4.0	3.5
Fisheries[2]	0.4	30	-12.0	0.0	1.0	1.0	-0.0	1.0	1.0
Government	7.0	912	-2.0	-5.0	0.0	0.0	-2.0	1.0	1.5
Total Gross Domestic Product	100.0	13,585	-7.0	0.5	2.5	-2.0	-4.0	3.0	2.5

[1] All figures in this table are based on estimates of the Gross Domestic Product at factor cost (value-added approach). An alternative measure of GDP at market prices, i.e. the price paid by consumers, is given in Table 11, with total 1982 GDP of $15.4 billion vs. the $13.6 billion above. The two values are compatible, just different ways of measuring the same thing. Note that the aggregate economic growth rates using the two methods are identical.

[2] The percentage share of the economy for these primary industries combines primary activity and dependent or related manufacturing activity.

[3] Includes wholesale trade. For the purpose of this table, we have assumed wholesale activity proportional to the projected growth rates in the retail sector.

Table 32

B. C. CENTRAL SECTORAL GROWTH[1]

Restrained Recovery

	Average 1961-1980 Share of Economy	1982 Estimated Actual Value	Real % Change in Value Added						
			1982	1983	1984	1985	1986	1987	87-2002
	%	$ Millions							
Agriculture[2]	1.6	208	2.5	3.5	4.0	4.0	3.0	3.0	3.0
Construction	7.2	1,055	-5.0	1.0	3.5	8.0	4.0	3.0	3.0
Financial Services	12.3	1,608	-3.8	1.5	3.4	4.0	4.0	4.5	3.9
Forestry[2]	11.5	1,201	-16.0	8.0	22.0	16.0	10.0	-8.0	1.5
Manufacturing	7.7	1,076	-5.5	3.1	4.3	3.5	3.5	3.0	3.0
Mining[2]	5.0	455	-18.0	5.0	26.0	14.0	-5.0	2.0	5.8
Retail Trade[3]	13.0	1,766	-11.0	2.0	5.9	8.7	8.8	4.0	3.5
Transportation	11.1	1,728	-6.0	1.0	4.5	3.0	3.0	3.5	4.0
Utilities	3.4	512	-3.8	1.0	2.5	3.7	3.2	2.5	2.5
Community Business & Personal Services	19.8	3,033	-5.8	1.0	2.1	3.2	4.0	4.5	4.8
Fisheries[2]	0.4	30	-12.0	0.0	2.0	2.0	3.5	2.0	1.0
Government	7.0	912	-2.0	-4.0	0.0	1.0	1.5	1.0	1.5
Total Gross Domestic Product	100.0	13,585	-7.0	1.8	5.8	6.0	4.5	2.0	3.7

[1] All figures in this table are based on estimates of the Gross Domestic Product at factor cost (value-added approach). An alternative measure of GDP at market prices, i.e. the price paid by consumers, is given in Table 11, with total 1982 GDP of $15.4 billion vs. the $13.6 billion above. The two values are compatible, just different ways of measuring the same thing. Note that the aggregate economic growth rates using the two methods are identical.

[2] The percentage share of the economy for these primary industries combines primary activity and dependent or related manufacturing activity.

[3] Includes wholesale trade. For the purpose of this table, we have assumed wholesale activity proportional to the projected growth rates in the retail sector.

Table 33

B. C. HIGH SECTORAL GROWTH[1]

Approaching Potential Output

	Average 1961-1980 Share of Economy	1982 Estimated Actual Value	Real % Change						
			1982	1983	1984	1985	1986	1987	87-2002
	%	$ Millions							
Agriculture[2]	1.6	208	2.5	4.5	4.5	4.5	4.0	4.0	4.0
Construction	7.2	1,055	-5.0	2.0	4.0	7.5	5.0	4.5	3.5
Financial Services	12.3	1,608	-3.8	2.5	5.0	5.0	5.5	5.5	5.0
Forestry[2]	11.5	1,201	-16.0	11.0	38.0	20.0	10.0	-4.0	4.5
Manufacturing	7.7	1,076	-5.5	5.0	5.5	5.5	5.5	5.0	5.0
Mining[2]	5.0	455	-18.0	10.0	26.0	43.0	0.0	5.0	6.5
Retail Trade[3]	13.0	1,766	-11.0	4.0	4.0	7.0	8.0	5.0	4.5
Transportation	11.1	1,728	-6.0	2.5	4.5	6.7	6.0	5.0	4.8
Utilities	3.4	512	-3.8	2.0	4.5	4.5	4.0	3.5	3.5
Community Business & Personal Services	19.8	3,033	-5.8	2.5	3.5	4.0	4.0	5.5	5.0
Fisheries[2]	0.4	30	-12.0	1.0	3.0	3.0	3.5	3.0	2.8
Government	7.0	912	-2.0	-2.0	1.0	1.5	2.0	1.5	2.0
Total Gross Domestic Product	100.0	13,585	-7.0	3.2	8.0	8.5	5.5	3.5	4.7

[1] All figures in this table are based on estimates of the Gross Domestic Product at factor cost (value-added approach). An alternative measure of GDP at market prices, i.e. the price paid by consumers, is given in Table 11, with total 1982 GDP of $15.4 billion vs. the $13.6 billion above. The two values are compatible, just different ways of measuring the same thing. Note that the aggregate economic growth rates using the two methods are identical.

[2] The percentage share of the economy for these primary industries combines primary activity and dependent or related manufacturing activity.

[3] Includes wholesale trade. For the purpose of this table, we have assumed wholesale activity proportional to the projected growth rates in the retail sector.

IX. GLOSSARY

- BALANCE OF PAYMENTS - a country's total exports minus total imports, including the flow of investment capital.

- BARREL - one U.S. barrel = 158.9 litres.

- BTU - British Thermal Unit, an amount of energy equivalent to 1054.6 joules.

- CANADIAN OIL PRICE - average Alberta price f.o.b. Edmonton plus petroleum compensation charges plus Canadian ownership charge.

- CAPITAL - in a physical sense, it is one of the factors of production. It includes machinery, equipment and buildings that are used to produce goods and services. In financial markets, it is the funds available for investment in financial assets, such as shares, bonds and real property.

- CAPITAL ACCOUNT - a measure of long and short-term capital flows between one country and the rest of the world.

- COHORT - the group of people within a specified range of ages.

- CPI - Consumer Price Index measures the level of prices of a fixed basket of consumer goods indexed to a base year.

- CURRENT ACCOUNT - the value of the flow of goods and services between one country and the rest of the world.

- ECONOMETRICS - the mathematical estimation of theoretical economic relationships and the development of economic models.

- HEAT PARITY - in comparing the price of different energy forms, this concept is used to ensure the comparison is based on the provision of an equivalent amount of useful energy.

- HFO - Heavy Fuel Oil.

- INFLATIONARY EXPECTATIONS - the common belief that high inflation is going to continue and may worsen, which itself becomes a factor of inflation.

- IMPORT PRICE INDEX - a measure of the prices paid by residents of a country for total imported goods and services, indexed to a base year.

- INTERPROVINCIAL MIGRATION - migration within a country from one province to another.

- JOULE - one Watt-second or the amount of energy required to move a force of one Newton through a distance of one meter.

- LABOUR FORCE - the number of individuals employed or unemployed, aged 15 years and over.

- LABOUR PRODUCTIVITY - in this report it refers to the level of real GNP/GDP produced per employed person.

- LFO - Light Fuel Oil.

- LNG - Liquified Natural Gas

- LPG - Liquified Petroleum Gas.

- MACRO-ECONOMICS - The study of the behaviour of the economy as a whole. It refers to the analysis of variable such as income, investment and consumption etc. in the economy.

- EEC - European Economic Community, a "common" economic market including the U. K., Ireland, Denmark, Belgium, the Netherlands, Luxembourg, France, Federal Republic of Germany, Italy.

- EXCHANGE RATE - the trading price of a national currency in terms of another.

- FISCAL POLICY - the use of government taxation and spending to reduce or stimulate economic activity.

- F.O.B. - free on board, i.e. the cost at the specified point of embarkation.

- GATT - General Agreement on Tarriffs and Trade, an international trade agreement, periodically renegotiated, which is intended to restrain participant nations from protectionist and discriminatroy behavior in trade relations.

- GDP - Gross Domestic Product - the value of production of goods and services during a specific time period within the geographic boundaries of a country, regardless of who produced it.

- GJ - Gigajoule or 10^9 joules.

- GNP - Gross National Product - the value of production of goods and services during a specific time period attributable to the residents of a country, regardless of where that production occurs.

- GNP/GPD Implicit Price Deflator (GNP/GDP Deflator) - a broader indicator of inflation than the consumer price index, measuring the price level of all the goods and services produced in an economy, indexed to a base year.

- GROSS MARKUP - refinery, transportation and distribution increments over feedstock costs.

- MERCHANDISE TRADE BALANCE - a measure of the flow of goods only between one country and the rest of the world.

- MICRO-ECONOMICS - the economics of individual consumers and firms.

- MONETARY POLICY - policies of the central bank used to control the availability and cost of credit in the economy, thereby influencing the level of economic activity.

- MONEY SUPPLY - (M1) narrow definition: all currency in circulation with the public and demand deposits.

- MURB - Multiple Unit Residential Building, referring to a subsidy program set up by the Federal Government to aid the construction of multiple dwelling units.

- NEP - National Energy Program

- NETBACK - delivered price less taxes and transportation costs from producer to market, i.e. producers effective revenue.

- NGGLT - Natural Gas and Gas Liquids Tax.

- NOMINAL VALUE - dollar value at current prices.

- NORP - New oil reference price.

- PARTICIPATION RATE - labour force as a percentage of the population 15 years of age and over.

- PETAJOULES - 10^{15} Watt-seconds.

- PCC - Petroleum Compensation Charge - the tax levied on domestic consumption to cover the higher cost of imported oil plus new domestic oil receiving the NORP.

- POTENTIAL ECONOMIC GROWTH - the growth in economic activity that could be achieved over a period if the capital stock and labour force are "fully" employed.

- REAL ECONOMIC GROWTH - the value of economic growth which occurred net of inflation.

- REAL VALUE - a dollar value that has been discounted for price inflation that has occurred since the base year.

- SEASONAL UNEMPLOYMENT - unemployment due to the seasonal nature of activity in some sectors, e.g. unemployment in fishing outside the fishing season.

- SERVICE TRADE BALANCE - a measure of the flow of services, such as tourism and dividend and interest payments, between one country and the rest of the world.

- SPOT PRICES - the price obtained for a commodity in the open market at a particular time.

- STAGFLATION - a combination of high inflation and unemployment rates and low economic growth.

- STRUCTURAL UNEMPLOYMENT - unemployment created by some basic long-term changes in demand, changing technology, or loss of competitiveness.

- TONNE - metric ton equal to 1000 kilograms.

- UNIT LABOUR COST - total value of wages, salaries and supplementary income per unit of real GNP.

- UNDERLYING CPI - an index of consumer prices excluding food and energy.

- WHOLESALE PRICE INDEX (WPI) - measures the level of prices at the wholesale trade level.

- YIELD CURVE - the difference between short-term and long-term interest rates. The yield curve is considered positive when the long rates exceed the short rates.